Focus on Woodworking Power Tools

SPECIAL ISSUE

Better Homes and Gardens®

WOOD®

THE #1 MAGAZINE FOR HOME WOODWORKERS

OCTOBER 1990 • ISSUE NO. 38
Display until October 11

YOUR INFORMATION SOURCE FOR NEW WOODWORKING EQUIPMENT

- Portable circular saws
- Radial-arm saws
- Tablesaws
- Cordless drill/drivers
- Drill presses
- Bandsaws
- Thickness planers
- Scrollsaws
- Plunge routers
- Jointers
- Lathes
- Portable sanders

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See page 78

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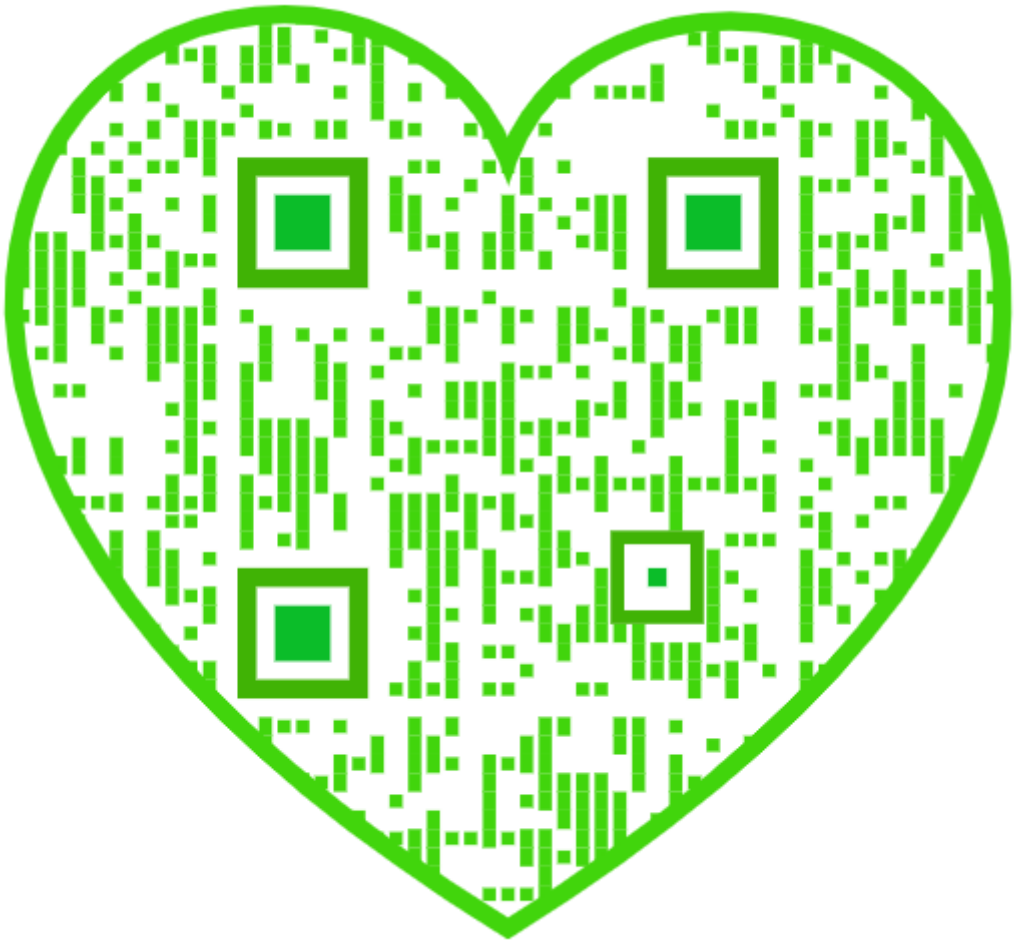

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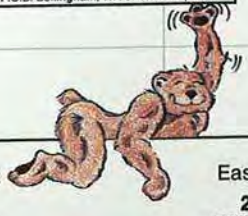

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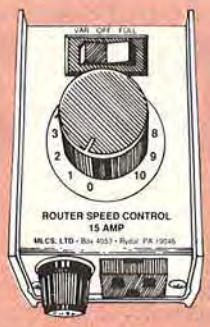

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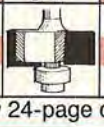
ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#601	Solid Carbide	1/8" **Spiral Cutter**		1/8"	1/2"	1/4" *	$ 9.00
#602		3/16" Spiral Cutter		3/16"	5/8"	1/4" *	$12.00
#603		1/4" Spiral Cutter		1/4"	3/4"	1/4"	$12.00
#903		1/4" Spiral Cutter		1/4"	3/4"	1/2" *	$12.00
#904		3/8" Spiral Cutter		3/8"	1"	1/2" *	$24.00
#905		1/2" Spiral Cutter	*Proper Adaptor Will Be Supplied	1/2"	1 1/2"	1/2"	$29.00
#350		1/8" **Round Over**	1/8" R	3/4"	3/8"	1/4"	$11.00
#351		3/16" Round Over	3/16" R	7/8"	1/2"	1/4"	$11.00
#230		1/4" Round Over	1/4" R	1"	1/2"	1/4"	$12.00
#353		5/16" Round Over	5/16" R	1 1/8"	1/2"	1/4"	$14.00
#209		3/8" Round Over	3/8" R	1 1/4"	5/8"	1/4"	$15.00
#355		1/2" Round Over	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#656		3/4" Round Over	3/4" R	2"	7/8"	1/2"	$21.00
#199		**Multiform Moulding**	Unlimited Patterns	2 1/4"	2"	1/2"	$40.00
#340		1/8" **Cove**	1/8" R	5/8"	3/8"	1/4"	$12.00
#205		1/4" Cove	1/4" R	1"	1/2"	1/4"	$12.00
#206		3/8" Cove	3/8" R	1 1/4"	9/16"	1/4"	$13.00
#207		1/2" Cove	1/2" R	1 1/2"	5/8"	1/4"	$14.00
#208		3/4" Cove	3/4" R	1 7/8"	3/4"	1/2"	$26.00
#460		1/4" **Bull Nose**	1/4" Dia. of Circle		3/8"	1/4"	$14.00
#461		3/8" Bull Nose	3/8" Dia. of Circle		3/4"	1/4"	$15.00
#462		1/2" Bull Nose	1/2" Dia. of Circle		7/8"	1/4"	$16.00
#464		3/4" Bull Nose	3/4" Dia. of Circle		1 1/8"	1/4"	$19.00
#506		1/2" **Pattern**	Flush Trim	1/2"	1"	1/4"	$15.00
#507		5/8" Pattern	Flush Trim	5/8"	1"	1/4"	$16.00
#508		3/4" Pattern	Flush Trim	3/4"	1"	1/4"	$17.00
#366		1/8" **Slot Cutter**	3/8" Deep	1 1/4"	1/8"	1/4"	$14.00
#368		1/4" Slot Cutter	3/8" Deep	1 1/4"	1/4"	1/4"	$14.00
#204		3/8" Rabbeting	3/8" Deep	1 1/4"	1/2"	1/4"	$13.00

New 24-page catalogue now available, featuring hundreds of bits.

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#210		1/4" **Core Box**	round nose	1/4"	1/4"	1/4"	$ 9.00
#211		3/8" Core Box	round nose	3/8"	3/8"	1/4"	$10.00
#212		1/2" Core Box	round nose	1/2"	1 1/32"	1/4"	$13.00
#418		3/4" Core Box	round nose	3/4"	5/8"	1/4"	$15.00
#213		1" Core Box	round nose	1"	3/4"	1/2"	$17.00
#214		1/4" **Straight**	plunge cutting	1/4"	3/4"	1/4"	$ 6.50
#215		5/16" Straight	plunge cutting	5/16"	1"	1/4"	$ 6.50
#216		3/8" Straight	plunge cutting	3/8"	1"	1/4"	$ 6.50
#217		7/16" Straight	plunge cutting	7/16"	1"	1/4"	$ 6.50
#474		1/2" Straight	plunge cutting	1/2"	1"	1/4"	$ 7.00
#775		1/2" Straight	plunge cutting	1/2"	2"	1/2"	$14.00
#218		5/8" Straight	plunge cutting	5/8"	1"	1/4"	$ 7.00
#219		3/4" Straight	plunge cutting	3/4"	1"	1/4"	$ 9.50
#220		1" Straight	plunge cutting	1"	1 1/2"	1/2"	$11.00
#500		3/8" **Flush**	**Trimming**	3/8"	1/2"	1/4"	$ 7.00
#502		1/2" Flush	Trimming	1/2"	1/2"	1/4"	$ 7.50
#503		1/2" Flush	Trimming	1/2"	1"	1/4"	$ 8.50
#221		1/2" Flush	Trimming	1/2"	1 3/16"	1/2"	$ 8.00
#545		**Tongue & Groove**	Straight	1 5/8"	1"	1/4"	$29.00
#845		Tongue & Groove	Straight	1 5/8"	1"	1/2"	$29.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	1/4"	$29.00
#846		Tongue & Groove	Wedge	1 5/8"	1"	1/2"	$29.00
#450		1/8" **Beading**	1/8" R	3/4"	3/8"	1/4"	$11.00
#451		3/16" Beading	3/16" R	7/8"	1/2"	1/4"	$11.00
#233		1/4" Beading	1/4" R	1"	1/2"	1/4"	$13.00
#453		5/16" Beading	5/16" R	1 1/8"	1/2"	1/4"	$14.00
#454		3/8" Beading	3/8" R	1 1/4"	5/8"	1/4"	$15.50
#455		1/2" Beading	1/2" R	1 1/2"	3/4"	1/4"	$17.00
#530		3/16" **Edge Beading**	3/16" Dia. of Circle		1/2"	1/4"	$15.00
#531		5/16" Edge Beading	5/16" Dia. of Circle		1/2"	1/4"	$15.50

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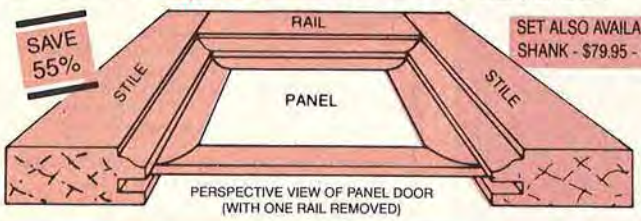

PERSPECTIVE VIEW OF PANEL DOOR (WITH ONE RAIL REMOVED)

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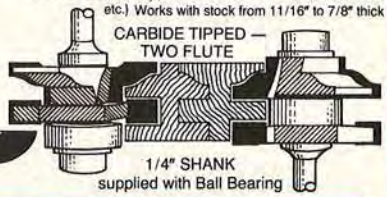

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October 1990 • Vol. 7, No. 6 • Issue No. 38

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A / 2 Band Saw Books *by Mark Duginske*
Learn what makes your bandsaw tick. Tune-up and maintenance; blade selection, tracking and tensioning; plus cutting methods for various woods and other materials. Hundreds of tips and shortcuts. Unlock your saw's potential.

02L09.03	Band Saw Basics	$ 9.95
16L04.02	Band Saw Handbook	$16.95

B / The Saw Setting Gauge That Can Be Read From Any Position
Most gauges have at least one or two main weaknesses. They either rest partially on the insert plate which is usually not the same height as the main table, or are so thin that it is difficult to ensure that teeth are being gauged at the top of the arc. This gauge is made from machined ¾" thick Aluminum and is 9" long. With ¼" graduations on one end and ⅛" on the other, it will indicate any height from ⅛" to 2". Most useful for table saws but also handy for routers. The markings are vertical on the one face and horizontal on the other, so you can read them easily and accurately.

71K26.02	Saw Setting Gauge	$16.95

D/ Our 202GF Gap Filling Glue Fills Gaps
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62J01.01	1 pt. 202GF	$ 6.95
62J01.03	1 qt. 202GF	$12.50

C / 1/16" Super Narrow Blades
You may have never seen a blade like this. A 24tpi raker style, it produces smooth cuts while making incredibly tight turns. We recommend using our Cool Blocks with these delicate blades, because they can be set closer to the blade without danger of overheating.

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A Garrett Wade exclusive. They look like "skip tooth" blades. But each tooth is actually formed as a hook, with every 5th tooth an unset raker. The result is a very smooth cutting blade that feeds easily. ¼" blade is for general work, and ½" for resawing and heavy straight sawing.

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33K11.02	¼" (4 tpi) Cabinet	$11.95
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80" Blades (Sears 12")		
33K12.01	1/16" Scroll	$14.95
33K12.02	¼" Cabinet	$10.95
33K12.03	½" Cabinet	$11.95
72" Blades (Shopsmith)		
33K13.01	1/16" Scroll	$13.40
33K13.02	¼" Cabinet	$10.25
33K13.03	½" Cabinet	$10.95

E / The "Blind Nailer" Used To Be A Staple In Every Finish Carpenter's Tool Box
This unique tool allows you to set nails or brads invisibly. Slip the special chisel, with its finger nail shaped cutting edge, into the positioning jig and tighten the clamping screw. Place the flat sole on the wood and strike the end of the chisel with a firm tap with the palm of your hand. The Blind Nailer will lift a perfect small chip from the surface. Hammer your nail or brad in and then glue the chip back in place.

44K01.03	Blind Nailer	$15.95

F / Special Bandsaw "Cool Blocks" Prolong Blade Life & Increase Accuracy
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Model		
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33K09.02	"B" Sears 12"	$11.95
33K09.04	"D" Shopsmith	$12.95
33K09.05	"E" Old Sears (¼" Rd.)	$11.95
33K09.06	"F" Jet 14" (fits Delta copies)	$11.95
33K09.09	"K" New Tilt-Head Sears	$16.95

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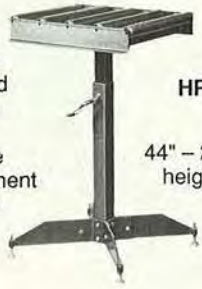

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This issue's cover wood grain: cocobolo *Cover photo: John Hetherington*

OCTOBER 1990 ISSUE NO. 38

Portable circular saws 30
Every woodworker should have one of these hardworking performers in the home shop. We give you the lowdown on 34 models.

Radial-arm saws 34
Crafty woodworkers almost always have an angle. Here's a look at eight versatile machines that can cut it.

Tablesaws 38
If you're in the market for your first tablesaw or ready for an upgrade, we've got specs on 33 machines for you.

Cordless drill/drivers 42
If you haven't experienced the go-anywhere convenience of these tools, read this report.

Drill presses 46
This helpmate takes the guesswork out of boring super-accurate holes. We report on 32 models.

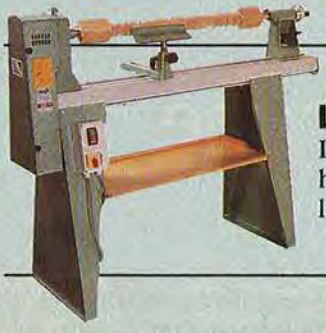
Bandsaws 50
From resawing thick stock to cutting pattern parts, a bandsaw can have you whistling a new tune while you work. Choose from among 32 curvaceous cutters.

Thickness planers 54
Some woodworkers think they can get along fine without one of these machines. But a look at 29 models might just change your mind.

Scrollsaws 58
One of the safest tools in the workshop, the scrollsaw excels at cutting intricate shapes in thin stock. Read all about it!

Plunge routers 62
These exciting new tools do everything a fixed-base model will do—and more. Before taking the plunge, though, read our report on these two-fisted tools.

Jointers 66
Make quick work of planing the edges and surfaces of boards with one of these precise tools. We tested 16 models and came up with some interesting observations.



Lathes 70
If you're ready to expand your woodworking horizons, why not try a lathe? Here's what to look for in these fascinating machines.

Portable belt sanders 74
To remove lots of material in a hurry, you can't beat this tool. New attachments and features make them a breeze to use.

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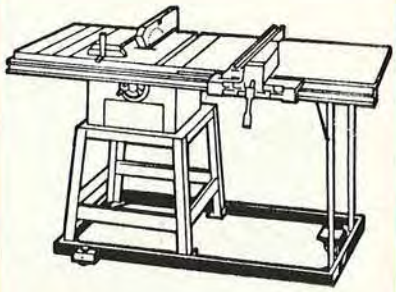
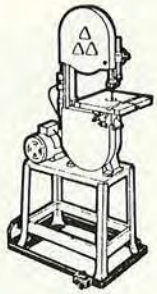
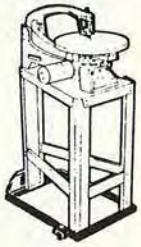
Mobile Machine Bases

to put your entire shop on wheels







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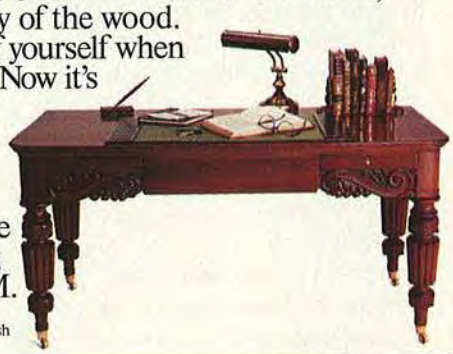

*Not for use with whitewash or paints.

3M

THE EDITOR'S ANGLE

Print this article

MEET THE MAIN MAN BEHIND OUR TOOL TESTS

In past issues, I've used this space to introduce you to some of the *WOOD*® magazine staffers and tell you about what they do for the magazine. But, as you might expect, we also rely heavily on freelancers in our endeavors. In fact, we work regularly with a select group of technical illustrators, artists, photo stylists, photographers, project scouts, and subject-area specialists to ensure that we consistently provide you with the very best woodworking information.

None of this cast of characters, though, is more colorful than George Granseth, our main tool consultant. That's him in the photo above. In many ways, George has the perfect profile for his role with our magazine. A successful contractor and cabinetmaker here in Des Moines, George has been around wood most of his life. He developed an interest in wood and tools as a youngster while he was hanging around the lumberyard that his dad managed.

Bill Krier, our products/techniques editor, calls George a woodworking "toolaholic" who prides himself on knowing why one tool works better than another. About George, Bill says, "He's never on time, and he's hard to get a hold of, but once you get him talking about tools, he won't shut up."

There's quite a bit of the journalist in George, too (not surprising, since he has a degree in journalism). He's naturally curious, loves detail, and doesn't mind taking a critical look at a tool, no matter what company's nameplate happens to be on it.

We appreciate George's frankness and his willingness to share his opinions with us (and our readers). And, we're confident that his input adds tremendously to the effectiveness of our tool-comparison articles.

Thanks, George!

* *

This bonus issue, brought to you at no extra cost, is definitely a "keeper" if you're in the market for stationary or portable power tools in the 12 categories we tested. We've included lots of basic buymanship pointers and updated our comparison charts to provide you with up-to-the-minute information.

Larry Clayton

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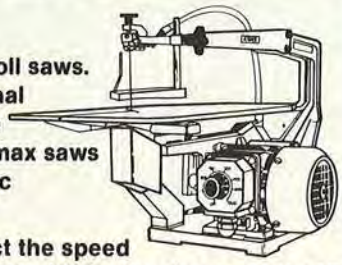

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TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD*® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

More tips on the router table

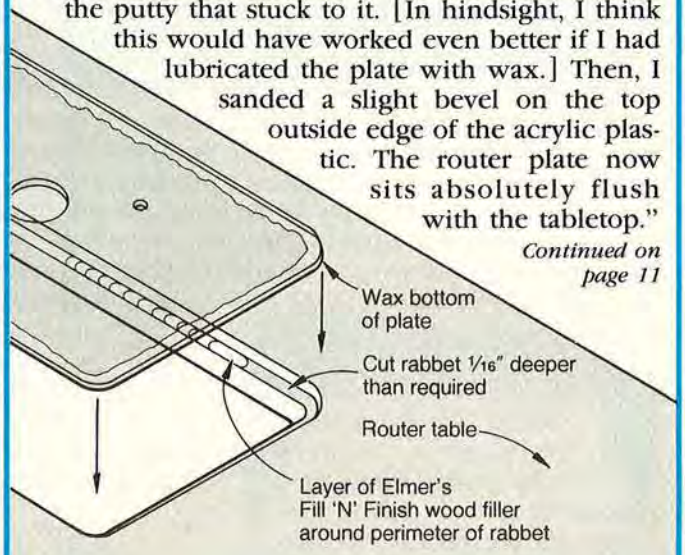
I enjoyed building the router table featured in your February 1990 issue. It really works slick!

I did make a couple of alterations. I shortened the base by 2½" and then added 3" locking casters. With some plywood shims, I brought the worktop to the same height as my tablesaw. This way, I have a roll-around extension table when I'm not routing.

—James Barrett, Redmond, Wash.

Bill Krier, our products/techniques editor, has a suggestion for installing the acrylic plate. "For proper routing, the plate must sit perfectly flush with the table surface," Bill says. "On my first attempt, I was unable to rout the rabbet so the plate sat flush with the top surface. After repeated attempts, one side or one corner was always a little high or a little low. Here's how I solved the problem: I cut the rabbet 7/16" deep [1/16" deeper than required], and then put a 1/16"-thick layer of Elmer's Fill 'N' Finish wood filler on the bottom surface of the rabbet. I placed the acrylic plate in position and tapped the plate down along the perimeter until it was perfectly flush with the table surface. After allowing the putty to dry overnight, I removed the acrylic plate and scraped off the putty that stuck to it. [In hindsight, I think this would have worked even better if I had lubricated the plate with wax.] Then, I sanded a slight bevel on the top outside edge of the acrylic plastic. The router plate now sits absolutely flush with the tabletop."

Continued on page 11


Wax bottom of plate
Cut rabbet 1/16" deeper than required
Router table
Layer of Elmer's Fill 'N' Finish wood filler around perimeter of rabbet

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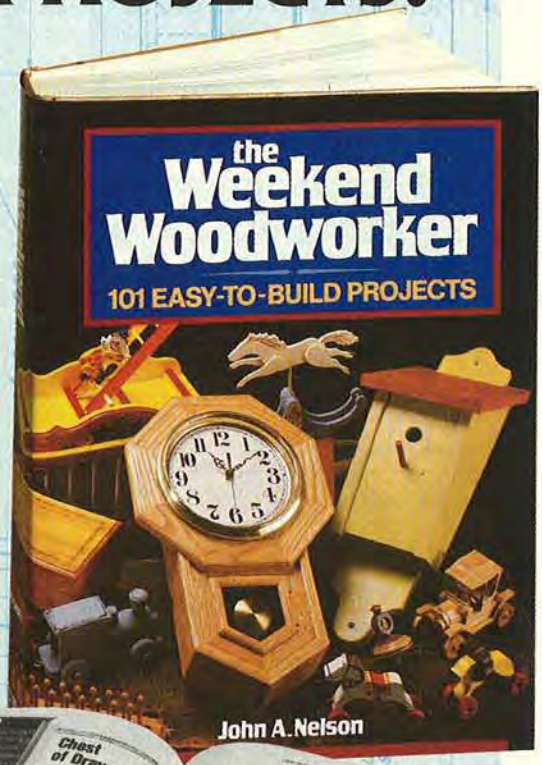

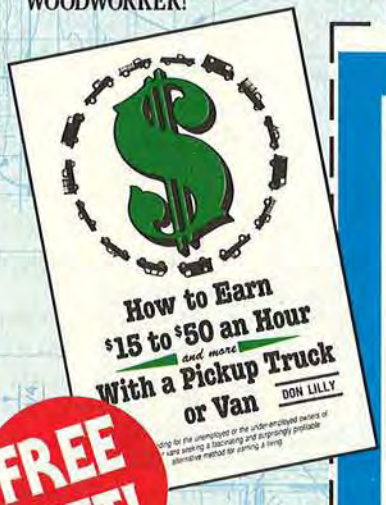

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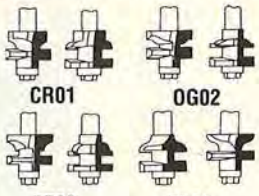

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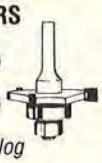

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TALKING BACK

Continued from page 8

Apply a boat-builder's trick

In reply to the June 1990 "Ask *WOOD*," don't let Robert Ward rip his 8′ post to run an electrical wire down the middle. I suggest Mr. Ward apply an old boat-building technique used for running shafts through keels.

First, drill a ⅝″ hole from both ends as deep as possible with an auger bit [rougly 18″]. Then, square off the end of a ½″ steel rod. Get the rod red-hot and keep inserting it into the hole to burn through the remaining distance. This is a long and tedious job, but I have done this with much larger holes to lengths up to 15′. Support the rod with a jig to help maintain a straight hole.

William E. Simmons, Rowley, Mass.

When we contacted Bob Ward, he hadn't yet drilled his post hole. He's now ready to tackle this task with the information you provided. Thanks for your suggestion, Bill. We shared four other reader solutions with Bob, but he thought your idea would give him the best results.

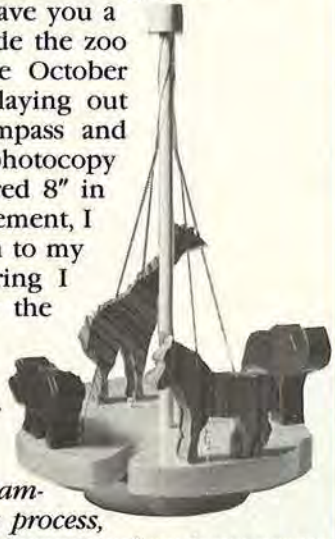
An easel to hold plates

I made several cherry tabletop easels for my wife from the plans featured in the December 1989 issue. I modified the plan by increasing the thickness of the holder and rest to 2″ and routing a depression in the center to hold porcelain china plates, platters, and bowls that my wife paints. Now, all the local china painters want me build the same easels for their china artwork.

John Sowders Jr., Richmond, Ky.

The name of the game: saving time

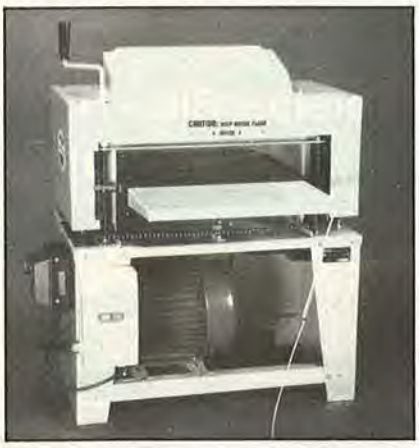
Here's a tip that could save you a lot of layout time. I made the zoo carousel featured in the October 1988 issue. Instead of laying out the pattern with a compass and rule, I enlarged it on a photocopy machine until it measured 8″ in diameter. With rubber cement, I then adhered the pattern to my stock. The only measuring I had to do was to get the photocopy enlarged to the right size.



—Dennis Kirby, Zachary, La.

Copy machines with the ability to enlarge do streamline the pattern-making process, Dennis. Because so many woodworkers have access to these great helpers, we now include the reproduction percentage with each pattern we can't print full-sized.

Continued on page 13



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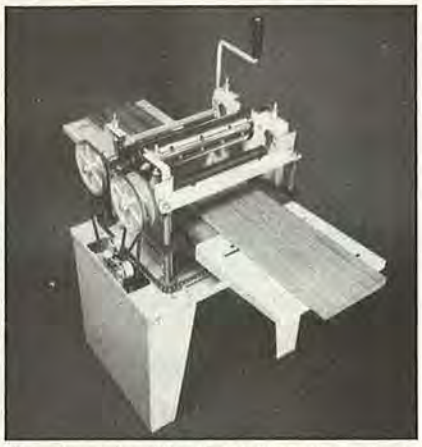

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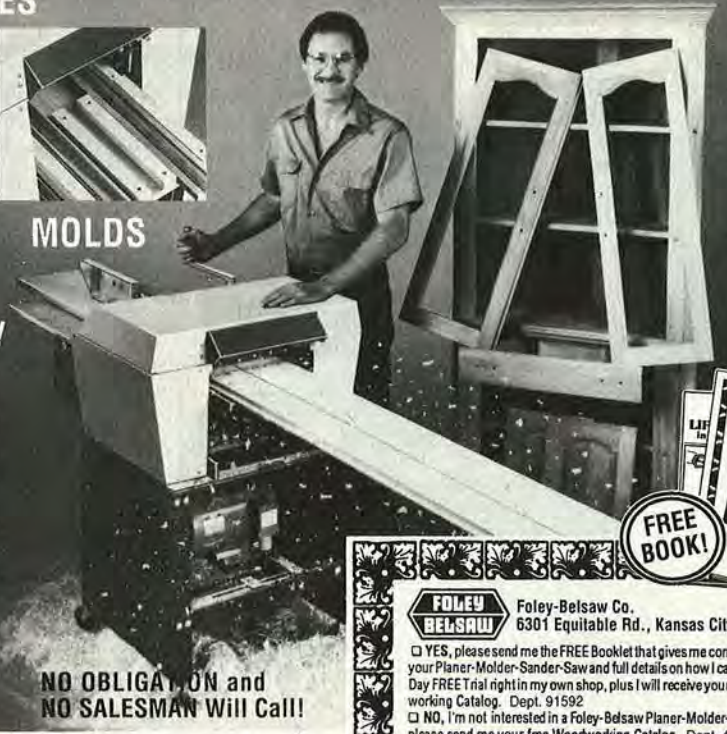

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TALKING BACK

Continued from page 11

More on cupping and carving

In the August 1989 "Talking Back" column, two readers argued with Jim Rose about cupping tendencies toward the sapwood of a board.

Their argument is correct as far as lumber cupping. However, carving produces a stress-relieving action on the fabric of the woods similar to what kerf-cutting would do to dimensional lumber.

By relieving the stresses caused by greater shrinkage on the sapwood side, the "relief" carving interrupts the fabric like kerf-cutting and allows more uniform shrinkage within the board.

—John Edlebeck, Armstrong Creek, Wis.

Tablesaw article arrived too late

Boy, I wish I had read your December 1989 issue before I purchased my tablesaw, because I sure wouldn't have bought the one I did. I should have known better than go with "el cheapo," but I did, and nearly lost the last joint on my middle finger because the blade wasn't square to the fence.

The only things I wish had been discussed—but weren't—were the nationwide availability and owner's manuals. It would have been useful to include at least an 800 number to call. Living some distance from any commercial center, I need a first-class manual to help out when setting up the saw for accuracy, and then proper maintenance.

–David Rogers, De Funiak Springs, Fla.

Hope you have a speedy recovery, David. Woodworkers can't expect mail-order tools to arrive ready to work without checking parts for alignment and tightness. Unfortunately, too many companies include bare-bones manuals with their power tools. To really learn how to fine-tune and operate a tablesaw, we suggest you pick up Roger Cliffe's Table Saw Techniques *published by Sterling Publishing. We include a list of manufacturer phone numbers at the bottom of most every tool chart.*

Continued on page 14

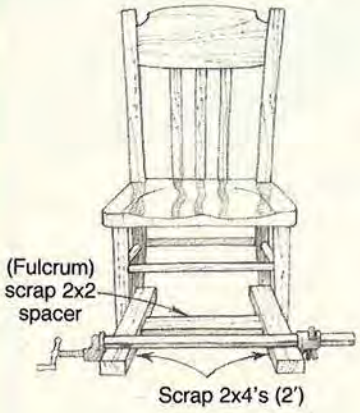
TALKING BACK

Continued from page 13

Fulcrum assists in breaking glue joints

Thanks for the pipe-clamp article in the August 1989 issue. Your sixth idea, although workable, requires ½" clamps and pipes. I've found a way—with the help of some scrap wood—to pull apart objects with ¾" clamps.

—Terry Gates, Buffalo, N.Y.



Digging in on garden issues

I must take issue with John Wolf concerning the use of sawdust in gardens (December 1989 "Talking Back"). Sawdust—and more especially, sawdust from pine or any coniferous tree—harms the soil if it is added while green or before it has had time to break down, which requires many years.

Sawdust is better left out of the garden. Leaves, or any materials used in making compost, are better.

—Lattie Yates, Chesapeake, Va.

"I would not want to use fresh sawdust," Richard Jauran, Iowa State University Extension horticulturist told us. "Sawdust is mainly carbon, and the bacteria that breaks it down requires nitrogen to survive. The bacteria can't get nitrogen from the sawdust, so it takes it from the soil. Sawdust, however, is a very good mulch. The only problem in using sawdust is when you have fairly fine, fresh sawdust. That may cake and shed needed water.

"On the East Coast, where soils tend to be acidic, if you add something to the soil that contains acid, you make things even worse. Many people there lime their soils because they are so acidic. The biggest constituent in wood ash is calcium carbonate, which is a liming material. Wood ash contains about 5 to 6 percent potash and a little bit of phosphate, but that's about it.

"Softwood vs. hardwood? I don't see this as a big problem, because a common mulch is conifer bark—decomposition is the important factor. Because soil characteristics vary so widely, the best thing to do is have your area extension agent or agricultural university check your garden soil's pH."

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Come on up! Fill the suitcase or the car trunk with square-socket screws! Then, be sure to enjoy the hospitality. You'll be welcome. And, you'll find it easy to recognize a Canadian. We say "eh?" a lot.

—Ralph Rethoret, North York, Ontario

Thanks for the invite, Ralph. We met a slew of talented and interesting woodworkers at the Woodstock Wood Show near Toronto this past September.

More to 'Waddles the Duck' than meets the eye

The cover of the October 1989 issue of *WOOD* magazine is correctly labeled "Collector's Edition." Seeing the photograph of the waddling duck as a grand-prize winner initially left me disappointed. But, its appearance is most deceiving.

Recognizing the quality of the judges, I concluded that there must be more to "Ducky" than meets the eye. Having just completed the first of what will be one duck per grandchild, I extend to the judges and brother Neil Seely my greatest congratulations.

—Saunders M. Bridges, Florence, S.C.

You're absolutely right, Saunders. Photographs can't begin to show the marvelous action of Neil Seely's duck. We're glad you gave this design a second look.

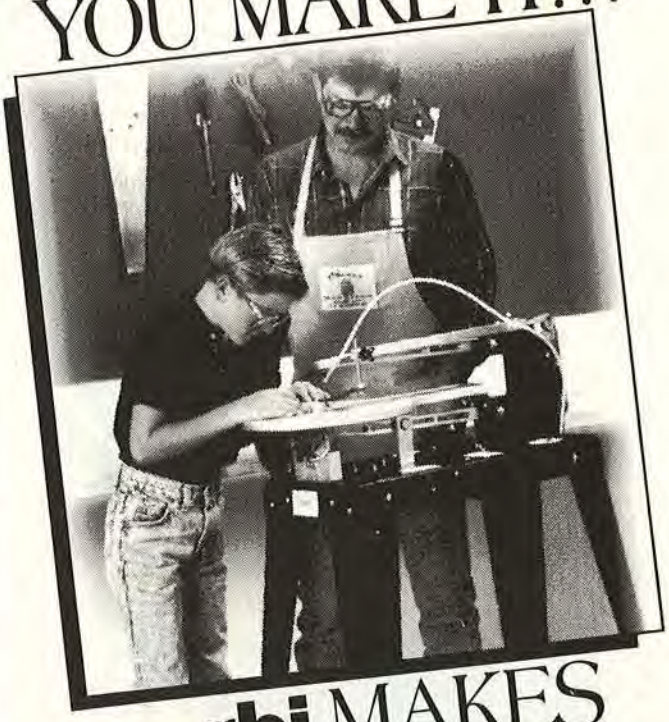
Another way to streamline assembly of stack-laminated bowls

I really enjoyed your recent article on stacked bowls. Don't overlook veneer scraps as a source of layers. Veneer averages about 1/28" thick. A band consisting of two layers of walnut sandwiched between a layer of maple would be about 1/8" thick and quite impressive. It will leave people wondering how you did it.

—Larry S. Buege, Marquette, Mich.

Continued on page 16

LIFE IS WHAT YOU MAKE IT...



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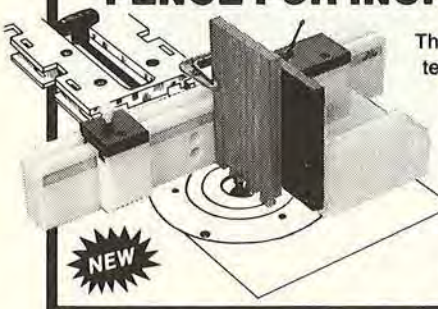

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TALKING BACK

Continued from page 15

Vanity plates

Just a few days after our October 1989 issue hit the mailboxes, we started receiving requests for license plates for the Woody cars. Some of you incredible readers worked quickly at building the car and then mailing a picture of the completed project to earn the brass plate.

We thought you'd enjoy learning who holds the low Woody numbers:

001 Jim Downing, Woody designer
002 *WOOD* magazine display case
003 Larry Clayton, *WOOD* magazine editor
004 Edwin Fuller, St. Paul, Minn.
005 Stanley Yanoff, Cathedral City, Calif.
006 Norman Orr, Columbus, Ohio
007 J. D. Shea, Manchester, N.H.
008 Clark Walley, Bainbridge, Ohio
009 Kenneth Poirier, West Chester, Ohio
010 M. R. Dorris, Clay, Ky.

We've already issued more than 675 license plates; we'll honor requests indefinitely.

Taking our bench to heart

For years, my husband and I enjoyed our friends' and relatives' patios, so we decided it was time to add one to our backyard enjoyment.

Our only problem was that our outdoor seating consisted of the usual folding lawn chairs. We wanted something better at a reasonable cost—something we could be proud of and that would give us years of service. But, high-quality patio furniture was beyond our budget.

Then, our February 1989 issue of *WOOD* magazine arrived. On the cover was what we wanted: "A Comfy Country Bench." We decided to build a couple of benches and we would be all set, right?

Wrong! We built the bench, and loved it, but we decided two 24"-wide matching side chairs would be a perfect addition. Then, we built a 38½×11¼×15" coffee table for our summer drinks. (It also makes a great place to rest our feet!)

We thought the chairs looked rather lonesome, so we created a 14¾×17½×28" side table with double hearts and an extra shelf to display our *WOOD* magazines. We sealed all our pieces with a good wood preservative and two coats of red paint. A trip to the fabric shop and a day at the sewing table produced all the cushions.

Now, we're the envy of all our friends and family. The best part was that our entire set, including seat cushions—cost less than $100! Thanks again for the original pattern, and keep them coming.

—Beckie and Gene Dunson, Findlay, Ohio

You two really know how to stretch a design—and a dollar. Thanks for sharing your ideas.

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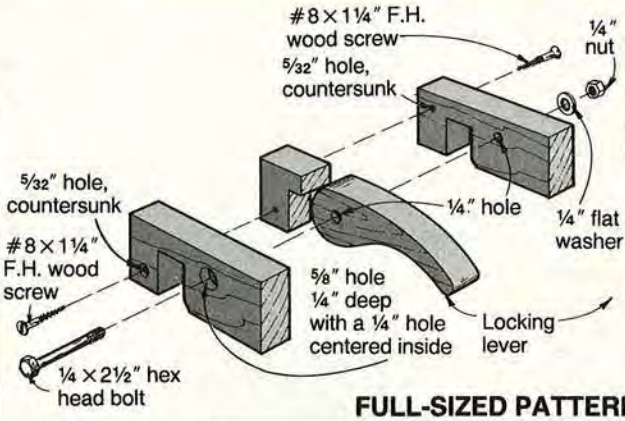
Print this article

CAM-ACTION FENCE STOP

This handy helper takes the guesswork out of setting up for precise multiple cuts on your radial-arm saw. Frazier Moore of Warner Robins, Georgia, designed it to lock on a ¾" fence. You also could clamp it onto the auxiliary wooden fence on your tablesaw miter gauge.

Marlen Kemmet
How-to Editor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¼" hole
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Note: For aligned bolt and screw holes, clamp pieces together when drilling.

Note: All stock is ¾" thick.

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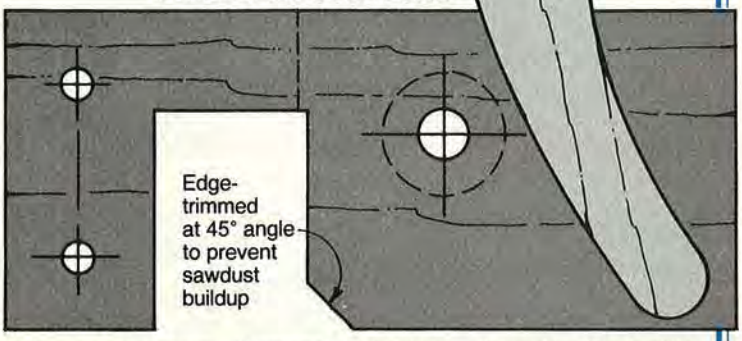

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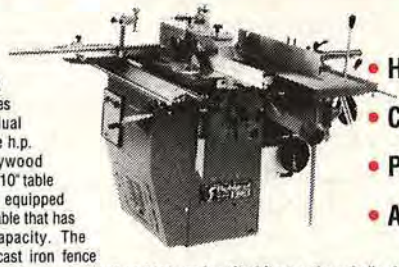

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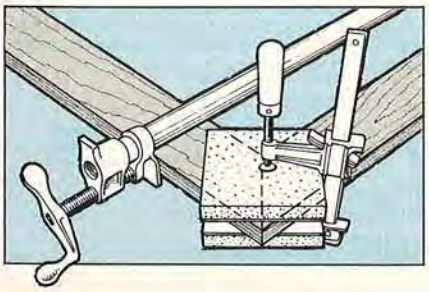
Keep mitered corners aligned while gluing

Accidental misalignment can botch any mitered corner. It's nearly impossible to hide poor joinery here, so make sure you get it right the first time.

TIP: Cut several 4×4" blocks from a discarded, plastic-laminated countertop. Clamp these blocks in place as shown *below,* with the laminate toward the workpiece. The plastic resists the glue and the blocks will hold the pieces in flush alignment.

—Richard Hopkins, St. Louis



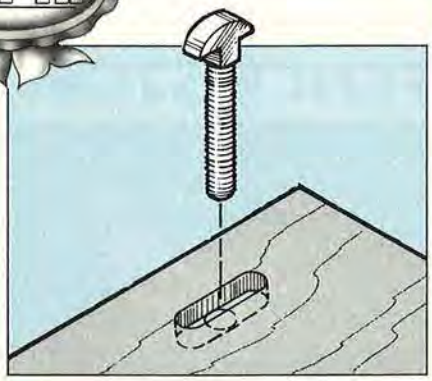
TOP SHOP TIP

A homemade "carriage bolt" with lots of grip

Carriage bolts deserve a place in any fastener arsenal, but the heads of these handy items lose their gripping power after you remove and replace them several times. The problem: the hole becomes too worn to hold the bolt.

TIP: Give the bolt a no-slip profile by cutting or grinding away opposite sides of the head as shown at *right.* Then, with a straight bit of appropriate size, rout a groove to hold the modified bolt head. Set the bit depth to match the height of the bolt head.

—Joseph Mock, Columbus, Ohio



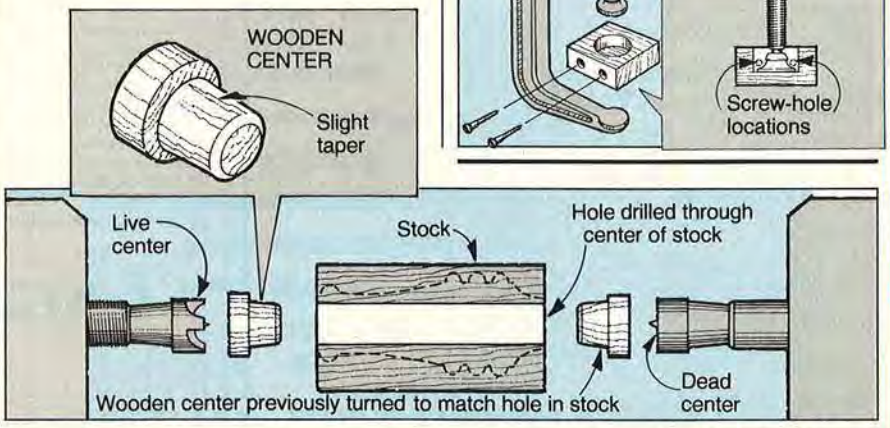
For his tip, Joseph receives a Ryobi JP-155 jointer.

For hollow turnings, drill out the center first

Some pieces such as salt-and-pepper shakers, or slide-action grips for antique firearms, require large holes in the center of circular pieces of stock. Boring the holes after turning the workpiece can be troublesome if you can't easily hold onto it. And, it's nearly impossible to bore the hole in the exact center.

TIP: Start by boring the desired hole in the square stock. Then, turn slightly tapered wooden centers, as shown *below,* that insert into the stock and allow secure mounting to the lathe.

—James R. Watts, Robinson, Ill.

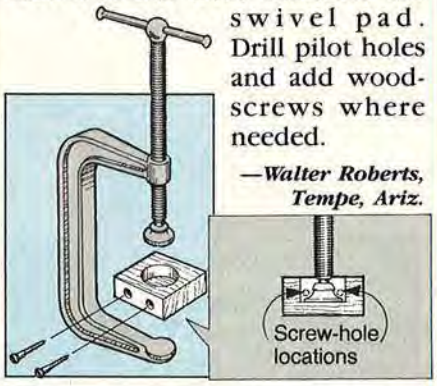


How to make your clamps 'project-friendly'

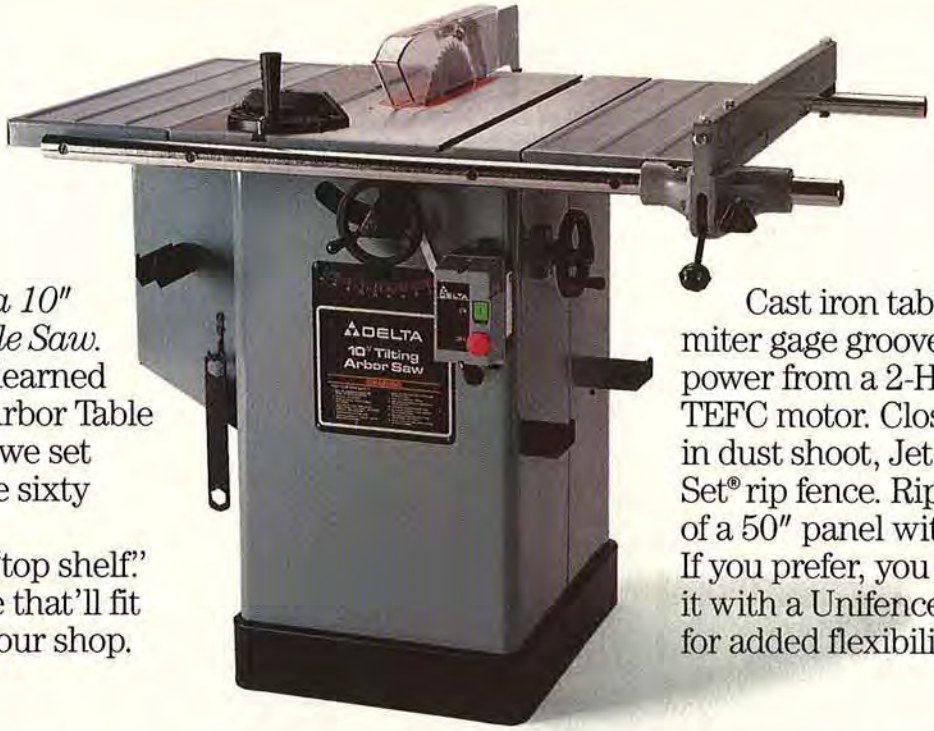
To protect your projects from metal clamp pads, you have to add small scrap blocks between the clamp and the project surface. But, it takes time to find the right block and then position it.

TIP: Solve these difficulties by making clamping blocks for the swivel end of your clamps as shown *below.* Bore holes for the swivel pad. Drill pilot holes and add woodscrews where needed.

—Walter Roberts, Tempe, Ariz.



Continued on page 20



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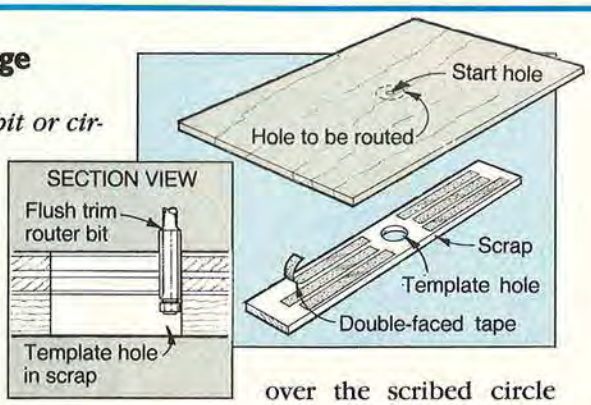
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 18

Use a router to enlarge wide-diameter holes

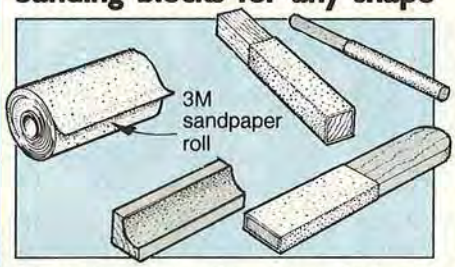
A drill press and Forstner bit or circle cutter work great for boring holes with diameters exceeding 1". However, if the workpiece doesn't fit on the drill-press table, that approach won't work.



TIP: Locate the center of the hole to be drilled, and with a compass, scribe its circumference on the surface opposite the faceside. Next, bore a hole of the desired size in a scrap of ¾"-thick stock. Then, center the hole over the scribed circle and attach it to the workpiece with double-sided tape or clamps. Drill a starter hole large enough to accept a flush trimmer bit for your router and cut the final hole as shown *above.*

—Bruce L. Hasslinger, San Diego, Calif.

Sanding blocks for any shape



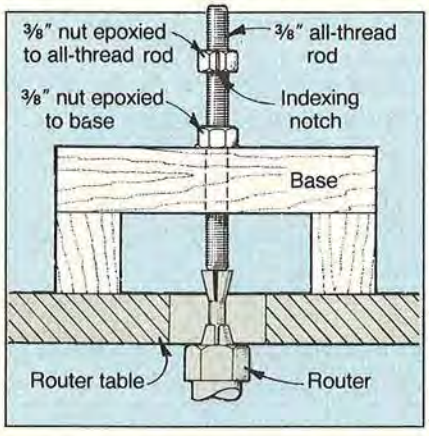
Most power sanders were designed for working on flat surfaces. But, when you must sand in tight places, these tools just don't cut it.

TIP: Convert scrap into sanding blocks of virtually any shape by covering them with 3M Stikit, an adhesive-backed sandpaper sold in rolls. Besides the shapes suggested in the drawing, adhering the abrasive material to a putty knife or even your finger often provides the shape of sanding block you need. If the abrasive peels off, staple it onto the backside or edges of the block.

—Harold Howting, London, Ontario

Accurate router-table depth gauge

Adjusting the depth of cut of a router bit can be a hit-or-miss proposition. The trial-and-error method can eat up a lot of time.

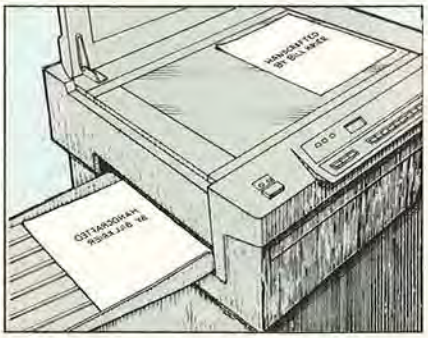


TIP: Build the simple depth gauge shown at *right* from hardwood scraps fitted with a length of ⅜" threaded rod and two nuts. First, file the ends of the rod smooth, then bore a 7/32" hole and use epoxy to attach one nut to the wooden base. On a flat surface such as a tablesaw top, turn the rod until it contacts the flat surface. Thread the second nut onto the rod until it is finger-tight against the attached nut. With epoxy, glue the second nut to the rod and file an index notch into one side. This size rod has 16 threads per inch, so one full revolution raises or lowers the rod 1/16". Likewise, a half-turn equals 1/32" and so on.

—B. W. Glass, Annandale, Va.

An easy way to reverse patterns

Some methods of transferring a pattern to a work surface, such as ironing a photocopied pattern as described in a shop tip in the February 1990 issue of WOOD *magazine, result in a reversed image. Since a reversed image will not always work, there ought to be a way to re-reverse the pattern.*

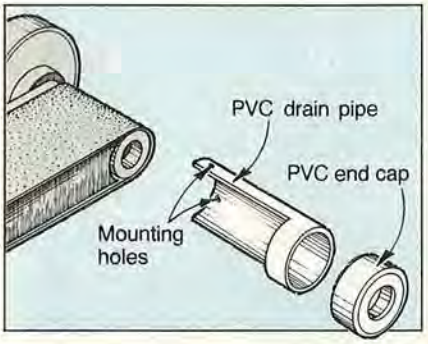


TIP: Photocopy the pattern or lettering you want onto an acetate transparency. You can purchase these transparencies at an office- or art-supply store, or have an instant printing shop do the job for you. Photocopying the transparency onto a sheet of paper as shown at *left* will give you a reversed pattern.

—Ed Zieverink, Cincinnati

A dust collector for stationary belt sanders

Stationary belt sanders kick out a lot of sawdust, so it makes good sense to vacuum up as many of the particles directly from the machine as possible. But if you have an older sander, or happen to buy one that doesn't have the proper fittings for dust collection, you can expect clouds of dust.



TIP: Build a dust-gathering shield from a length of PVC drain pipe and an end cap as shown at *left.* Use a holesaw to bore an opening of the correct diameter to fit the hose of your shop vacuum or dust collector. Mount this collector at the end of the belt and below the platen surface so that you can still sand long boards.

—William Hurst, Holland, Pa.

Continued on page 22

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LM72M010	Ripping	10"	24	57	38
LU73M010	Cut off	10"	60	70	44
LU87M010	Thin kerf	10"	24	68	39
LU88M010	Thin kerf	10"	60	74	44
LU98M010	Ultimate	10"	80	107	79
LU89M010	Non-ferrous metal	10"	72	87	59
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PS303	Gen'l Purp.	7-1/4"	24	25	19
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363	4 X 24 SANDER	181
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315	7-1/4" SAW 13 AMP	114
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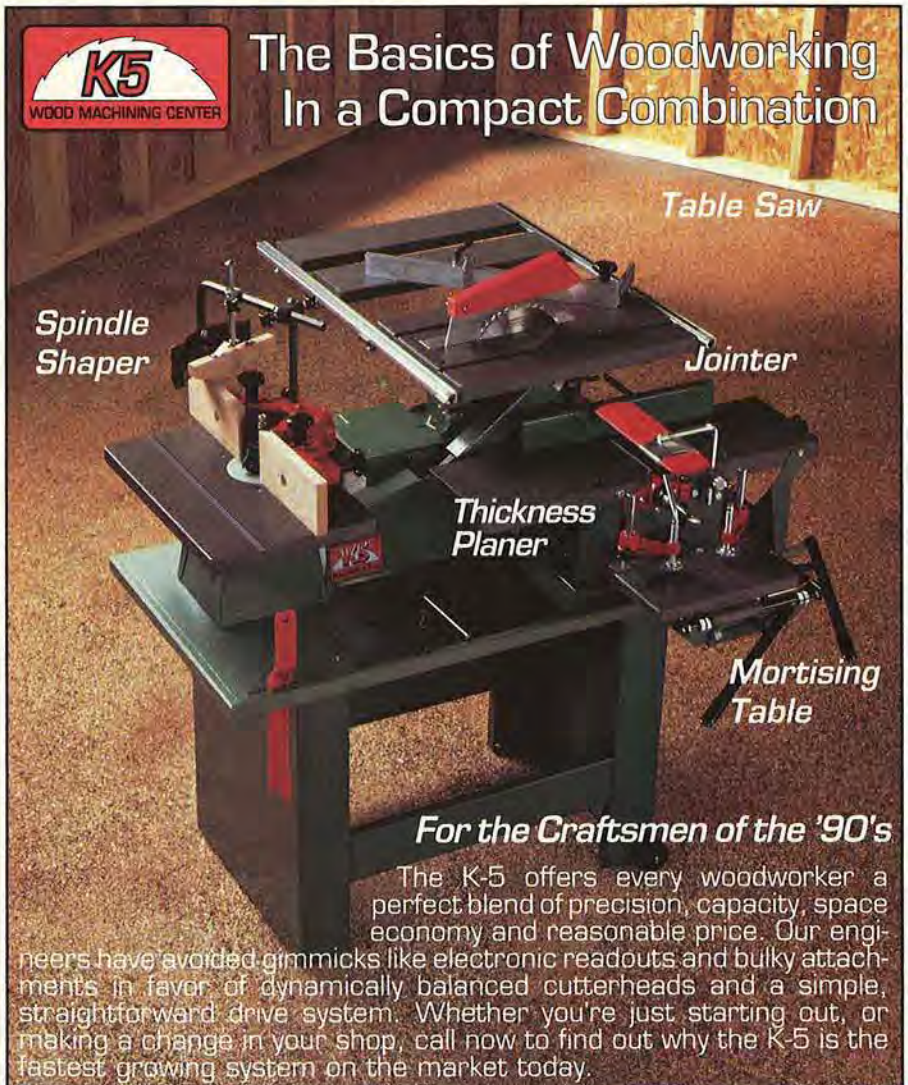

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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 21

Stay posted of drill-press speed limits

Exceeding correct drill press speeds can quickly overheat an expensive bit, robbing its cutting edge of hardness (temper). The result: dull bits. Slow speeds can lead to poor-quality holes.

TIP: As a reference for recommended rpm, post a drill-press speed chart near your machine (*WOOD* magazine will send you one for $1 ppd.). Then, as an added precaution and convenience, attach a spring-steel letter clip to the hood, as shown at *right,* and make a set of cards that lists the possible speeds. Attach the clip

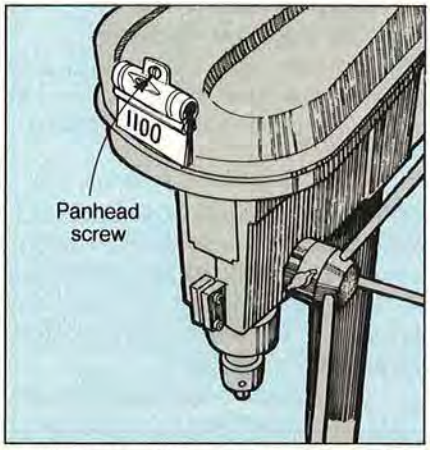
Tablesaw sanding disc

A good stationary disc sander can turn the drudgery of sanding into a comparatively easy job. But, if you can't afford one, get ready for tedious hours of sanding.

Aging new parts for old furniture

Buying old furniture in need of serious repairs can be a bargain for the person willing to fix it up and refinish it. One major hurdle: making new parts match the color of the original parts.

TIP: Disassemble the piece of furniture to be restored and use wood that matches in species and grain to construct any replacement parts. Reassemble the parts before stripping the varnish or other finish on them. Now, cover the replacement parts with dirty



with a small screw or epoxy. To show the current speed setting, display the correct card on top of the stack in the clip.

—Richard H. Dorn, Oelwein, Iowa

TIP: Cut an 8" circle out of ¼" tempered hardboard and bore a hole the size of your tablesaw's arbor in the exact center (usually ⅝"). Use spray adhesive to attach 80-grit sandpaper to one side and 100-grit to the other. Mount the disc in place of the tablesaw blade.

CAUTION: Tablesaws run at about 4,000 rpm, so limit the use of this sanding disc to small touch-up jobs. Also, avoid being in line with the spinning disc.

—James L. DeShaney, Appleton, Wis.

third time you do this, you won't be able to distinguish the new part from the old ones.

—Bill Perkins, Roachdale, Ind.

Continued on page 24

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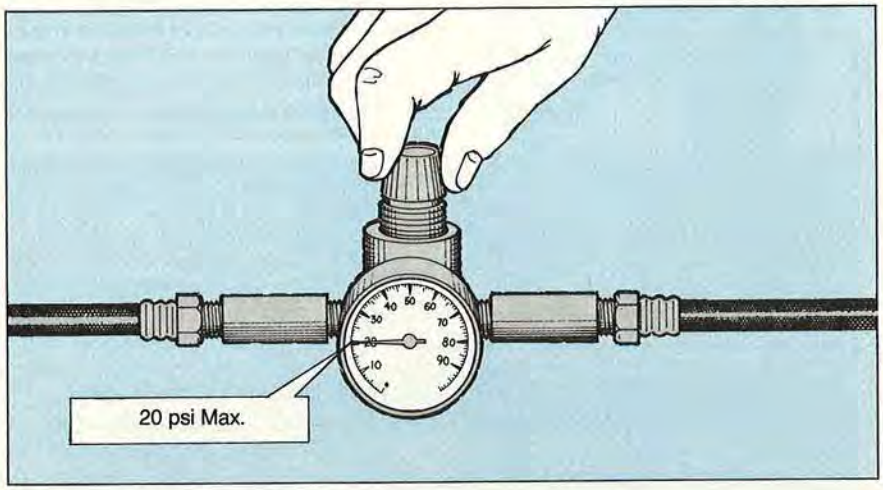
Continued from page 23

How to safely give yourself a pressurized dusting

Most woodworkers leave their compressors set in the 50–90 psi range for a variety of jobs, including dusting off themselves. However, at these high pressures, the air can get into cuts and other wounds and lift up skin. Ouch!

TIP: Remember to dial down the pressure to about 20 psi when blowing dust from your skin. At this pressure you'll still remove most of the dust, but safely. If necessary, post a sign to remind yourself.

—Mike Atkins, Shell Beach, Calif.

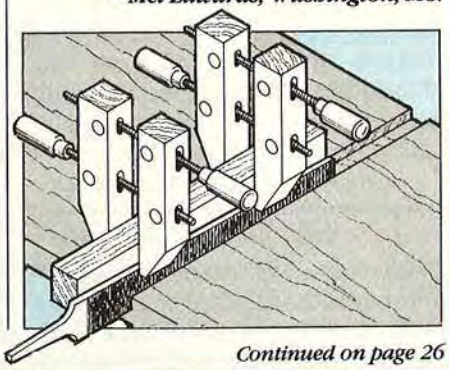


A raspy solution for slightly narrow dadoes

Occasionally, you cut a dado and then discover that it's just a hair too narrow to receive the board that fits into it.

TIP: Attach a rasp to a wooden block with handscrews as shown *below*. Gently enlarge the dado for a precise fit, being careful not to mar your workpiece. For maximum precision, frequently check the fit.

—Mel Edwards, Washington, Mo.



Continued on page 26

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- *Saws with similar features sell for over $700*
- *Special introductory price...*

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(item **#SVS**, UPS $10)

Cut intricate patterns in many different types of materials with this versatile machine. Purchase includes many FREE extras.

This new model features a powerful, high quality **electronically controlled universal motor that gives full power and torque at all speeds**. Similar in design to our Super-15" model, the cutting action has been re-engineered to give smoother cutting and performance equal to saws many times the price.

Dial any speed from 400 - 1800 cuts/min to set the speed specifically for the job at hand. Use slower speeds for cutting plastics, metals and hardwoods.

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• **Dust blower** • 1 dz blades • EZ-Set permanent top-arm blade holder • 4 Standard blade holders • EZ Jig for attaching standard blade holders • Neptune 1-1/2" lettering guides w/6 patterns

Specifications:

- Motor: Universal motor w/electronic speed control. 110V, 1.3Amp, sealed ball bearings
- Speeds: 400 -1800 cuts/min
- Throat : 15" deep • Stroke - 3/4"
- Tilt : 0 - 45° left • Cut Depth: 2"
- Blades: accepts pin and plainend
- Construction - cast iron

Scroll Saw Products

Super 15" Scroll Saw

Our most popular model. Same specs as Super V-15 model with single speed 1650 cpm motor, dust blower optional. Same free accessories as listed above.

#SAW ... Only $119.95 (UPS $10)

Dust Blower (option for Super 15" saw)
#BKT ..... $15.00/kit (•)

Variable Speed Motor Upgrade

Convert your saw to variable speed! This quality motor will fit our Super 15" model and other saws of similar design. Also fits Sears(tm)16", and "C" arm "Superscroll" styles - 18", 22", and 26" sizes. Limited 90 day warranty on non-Penn State saws.

#SVM .....Only $99.00 (UPS $4)

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Scroll Saw Stand (On Sale)

34" High - the perfect height.

#STD .. (reg $39), **On Sale $26** (UPS $4)

Foot Switch

For hands free operation. Installs in line w/power cord. Easy hook-up. 7 amp, 6 ft

#FSW ..... $20.00 (•)

Item #L40

Wood Lathe XL- 40

Reg $299.95, *On Sale* **$249.95**

Includes ***FREE*** 8 piece Wood Chisel Set ... **$34 Value**

Our new XL-40 Wood Lathe surpasses every lathe in its price range with quality & features you would expect from machines many times its price . FEATURES .....

Heavy Duty cast iron construction provides smooth turning action • **40" Centers** • **16" Swing** for turning larger bowls • Smooth toolrest movement on 1" solid steel rails • **"Live" center** on tailstock • **Motor mounted for easy positioning** and belt changes • **Sturdy 52" steel base** mounts on table top or optional stand.

PURCHASE INCLUDES:

- Lathe with Motor & Base • Toolrest
- 6" Faceplate • 8 pc wood turning chisel set

SPECIFICATIONS:

- MOTOR: 1720 RPM, 1/2HP, 8AMP, 110V
- 3 Speeds: 660, 1500, 2850 RPM
- Headstock thread - 3/4" x 10 tpi
- Overall length: 60" - Weight : 100lbs

Item **# L40 .....*On Sale* $249.95** (UPS $20)

Lathe Stand

Heavy duty. Wt. 25Lbs
Size: 28"H X 56"L X 21" W
Item **#LST .... $44 /ea** (UPS $6)

Super 125 Planer

On Sale $349.95

This machine will pay for itself time and again by planing your own wood. Finishes wood like machines many times its price.

• **Portable** at 65 lbs • **Power feed**
•12 1/2" wide High Speed Steel Knives
Shipped assembled and ready to run.

SPECIFICATIONS:
Motor: 16Amp, 115V, 8000RPM, 2HP• 26.2 fpm auto feed rate • 16,000 Cuts/min • Thickness of stock: 3/16" - 6" • 1/8" Max depth of cut • 2 HSS knives

Item #PLA ..... $349.95 (UPS $15)

Planer Accessories

Free plans for roller stand with purchase of rollers

Extra Set of 2 Knives
High Speed steel, 12-1/2" long.
Item #PKN .....$25.00/set (•)

Dust Chute
For vacuum takeoff of wood chips.
#PDS ..(reg $24), **On Sale....$15** (UPS $3)

Planer Stand (Heavy duty)
Drilled for Super 125 Planer. 27-1/4"High.
#PST ...(Reg $44), **On Sale...$39/ea** (UPS $6)

Roller Stand
HTC brand support stand w/heavy duty ball bearing roller. Height adjusts from 25" - 44".
#PRS ...(reg $40), **On Sale** ...**$35** (UPS $4)

Ball Bearing Rollers
(Minimum purchase 2 rollers). Build a roller stand, infeed/outfeed table etc. with these 13" X 2" Heavy Duty rollers. Inclues **FREE** plans for roller stand shown above.
Item **#BBR** ..... **$6.50/ea** ($3 UPS /order)

New Model with 8" disc

Two way 4"x 8" Sander

On Sale ... $114.95 (UPS $8)
(Includes **$10 FREE** Belts & Discs)

Item #S48

Here's a machine that adds true versatility to your shop.

New design uses universally available 8" discs, 4" x 36" belts • Includes Assortment Of 3 Belts, 4 Discs Of Various Grits • **Built in Dust Collection** outlet • Aluminum table: tilts to allow bevel sanding to 45°, includes mitre gauge, movable for use with disc or belt • Belt tilts to any position from horizontal to vertical • **Quick release lever** for changing belts • **Single action tracking** adjustment • Motor 1/3HP, 1720RPM, 115V • Weight : 40Lbs

DC-1 Dust Collector

(Includes $15 ***FREE*** Hose & Fittings)
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Item #DC1

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SPECIFICATIONS:
1HP • 110/220V (pre-wired 110V)
• 610 CFM air flow • 2ea 20 gal bags
• 4" inlet •Castors on base • WT.: 75 lbs

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TIPS FROM YOUR SHOP (AND OURS)

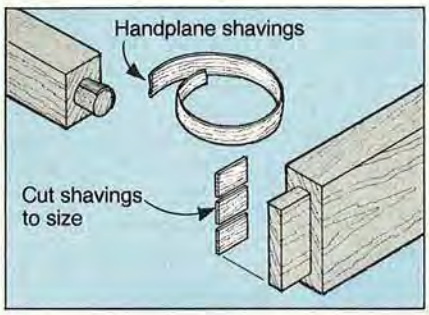
Continued from page 24

Shavings correct loose-fitting joints

Little things can happen to produce tenon joints or dowel holes that don't have the snug fit necessary for a strong joint.

TIP: Rather than trashing the undersized member, cut some thin shavings from a scrap of the material with a hand plane. Glue these shavings to the tenons or dowels and sand to fit.

—David A. Alexander, Oneonta, N.Y.

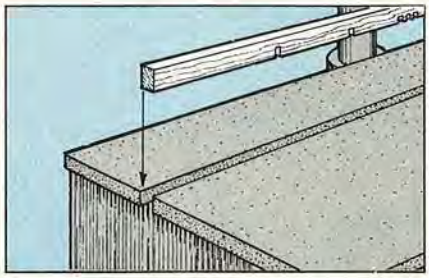


How to ensure smooth rips on your radial-arm saw

Instant panic can result from catching a corner of your stock on the fence of your radial-arm saw while making a rip. The culprit: snagging the material on one of the kerfs in the wooden fence.

TIP: Avoid this problem by loosening the fence and turning it over so the kerfs face down. When finished, be sure to return the fence to its normal position.

—B.H. Freeman, Springfield, Va.

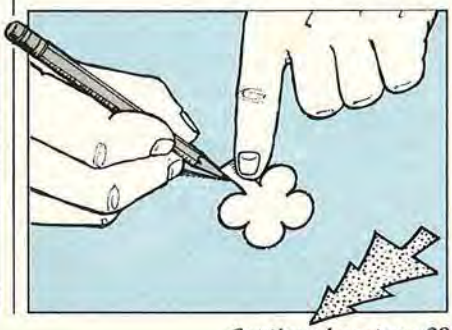


Template with 'true grit'

Tracing around miniature templates made of paper or thin scrapwood can be difficult because the pattern tends to slip.

TIP: After transferring the shape onto the back of 60-grit sandpaper, cut out the shape with a heavy scissors or straight-cut tin snips. Place the pattern facedown and apply finger pressure to keep it in place as you trace around it.

—Al Schlabach, Flora, Ill.



Continued on page 28

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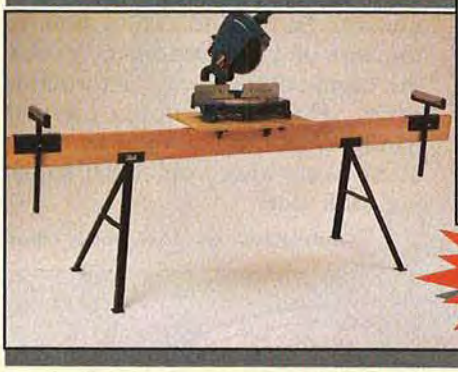

This fine work center will bring ease and accuracy to your mitering work. Saw support and rollers are sturdy, adjustable. Folds up for easy carrying. **RN01**

$99.95

Reliant 12" Planer

Powerful planer is totally portable, with a 2 H.P. motor that lets you handle workpieces up to 12" wide and 6" thick. Makes 16,000 cuts per minute. Stand not included! **NN912P**

$339.95

NN912S	Planer Stand	$39.95
NN913	Dust Chute	19.95
NN914	Spare Blade Set	24.95

15 Pc. Router Bit Set

1/4" shank tungsten carbide bits really can take the heat. Includes rabbeting, chamfering, laminate, roman ogee, cove roundover, dovetail, vee groove, combination panel, 3 straight, a mortising, flush trim and bevel trim bit. **DPARB151**

$99.95

Reliant Dust Collector

Attach it to your woodworking machinery to keep your workspace free of dust and chips. Operates on a 1 H.P. motor. Vacuums more than 600 cubic feet per minute. **NN720**

$199.95

15 Pc. Forstner Bit Set

Create extremely clean, flat bottom holes in thin veneers or through end grain and knots. Sizes 1/4" to 2", 3 1/2" long with a 3/8" shank. Come in a sturdy wooden case. **YYFB15PRT**

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Our Improved Doweling Jig

This jig centers automatically when you tighten it on your workpiece, even on round or irregular stock.Cast steel. Includes 6 bushings. **DDZDJ001**

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TIPS FROM YOUR SHOP (AND OURS)

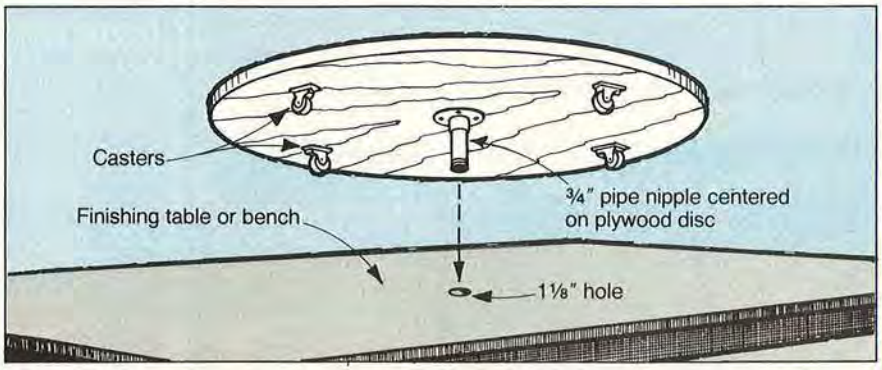
Continued from page 26

Turntable makes it easy to spray finishes

Spraying finish or paint can be tricky for beginners and old hands alike, particularly if you have too little space to move readily around the project as you wield the spray-gun or spray can.

TIP: Build a turntable to use on top of your workbench or finishing table. First, from ¾" plywood, cut a piece with a 3' diameter and screw a ¾" pipe flange at its center. Near the perimeter, attach four or more swivel plate casters, as shown *below*. Finally, thread a pipe nipple into the flange and drill a hole in the top of your bench to receive the nipple that serves as a turntable pivot. Placing projects on this handy device allows you to rotate them easily after you finish spraying each side.

—Kenneth Boyd, Tablequah, Okla.

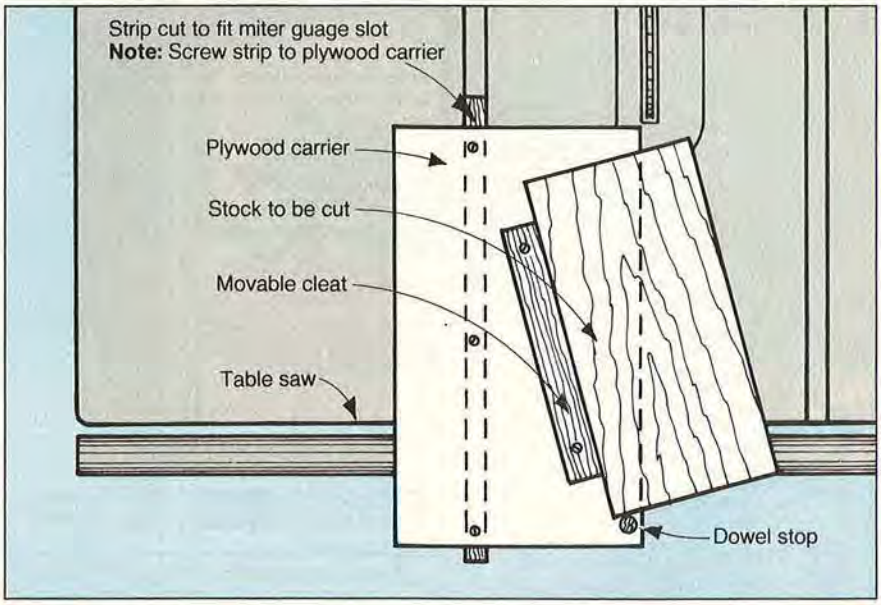


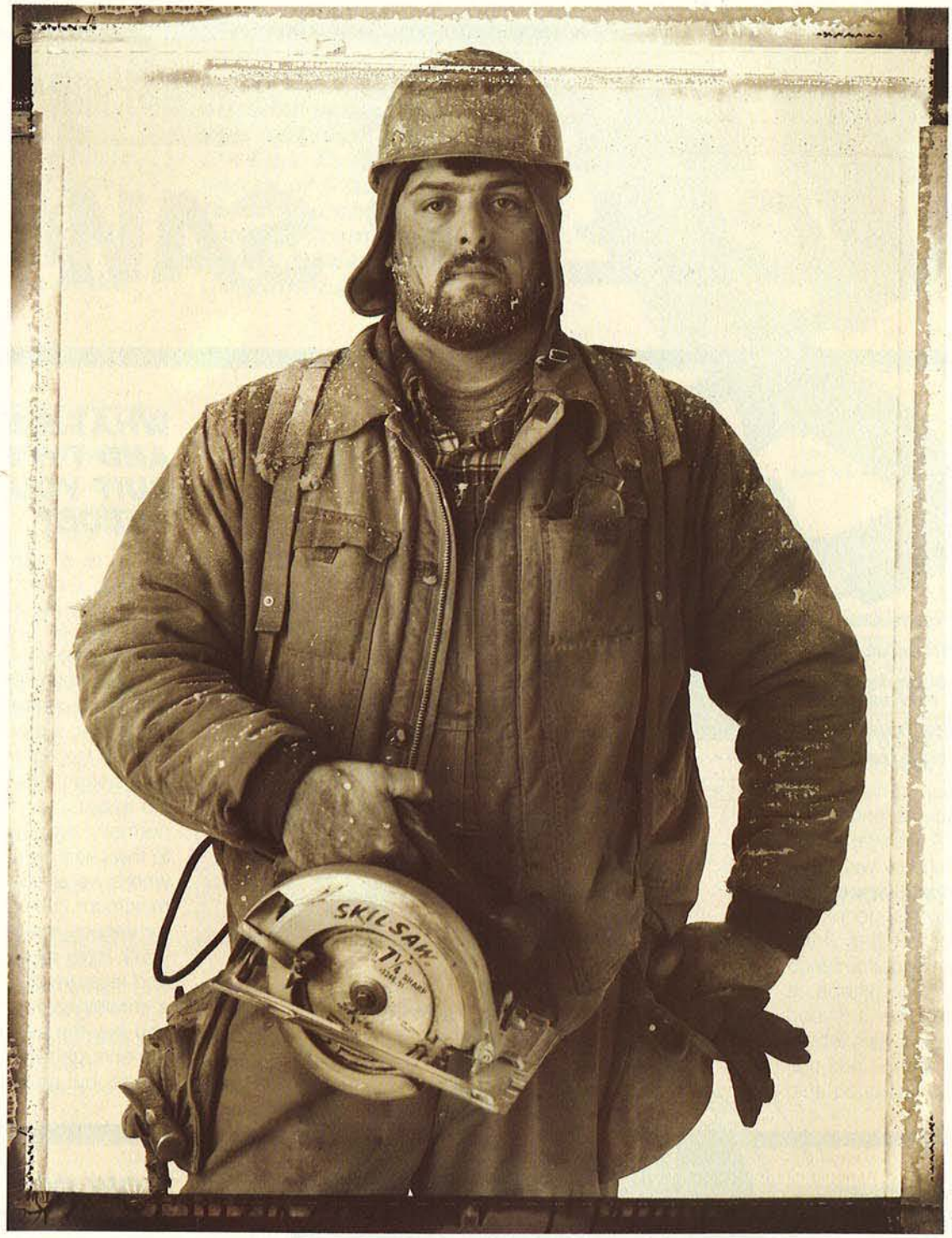
Carrier makes ripping at angles safe, easy

Making rip cuts at angles to the edge of a small workpiece can be both difficult and hazardous. Like many other shop tasks, a simple jig makes this operation safe and easy.

TIP: Build an adjustable carrier using a 16×16" piece of ½" plywood. To the bottom side, screw a strip that snuggly fits your saw's miter-gauge slot. Then, install a dowel stop near the rear edge as shown *below*. To the top side, screw a movable cleat, and reposition as needed to cut desired angles.

—Carl Cummings, Marcellus, Mich.





Joe Cuffe, Carpenter, Chisholm, Minnesota.
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PORTABLE CIRCULAR SAWS

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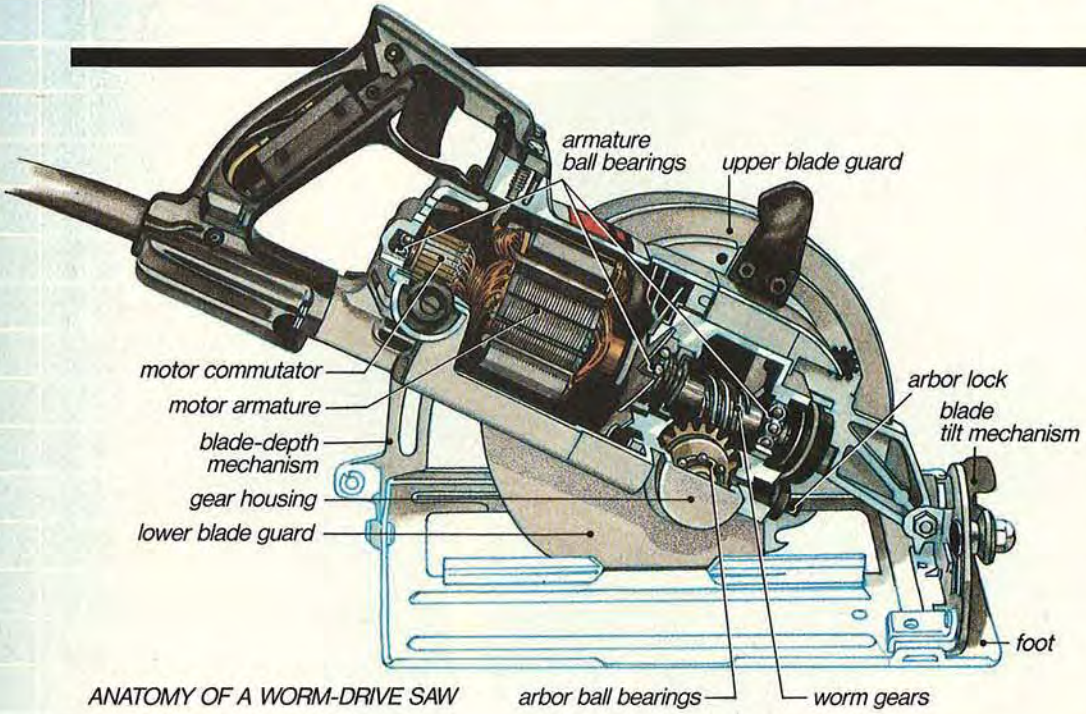
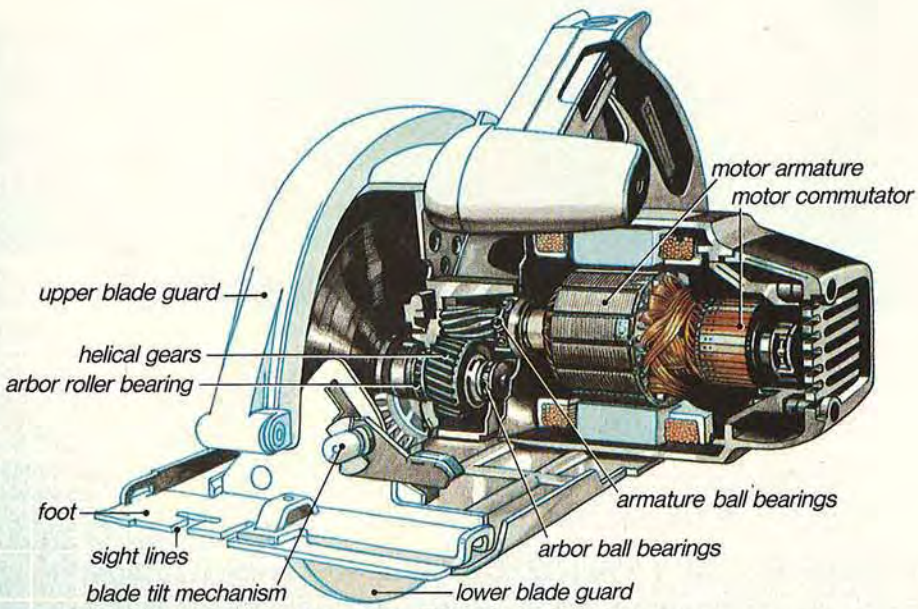


ANATOMY OF A WORM-DRIVE SAW



ANATOMY OF A HELICAL-GEAR SAW

WHAT SIZE AND TYPE SUIT YOUR NEEDS?

The size of a circular saw refers to the maximum diameter of blade it accepts. To choose the right size for your needs, first determine the thickest stock you normally cut. Then, refer to the chart on page 32 where we show you maximum cutting depths for various models. Since you'll have more control and less arm fatigue with a smaller saw, we suggest you buy the circular saw big enough for your needs, but no larger.

HOW DOES THE FOOT WORK?

If you're getting the feeling there's more to circular saws than just a blade, handle, and motor, then stay with us: You also have two depth-

More than 50 years ago Skil introduced its model 77, a hand-held power saw that rough cut stock into smaller pieces. Today, companies make more portable circular saws than you can shake a 2×4 at. To make sense of it all, we tested machines ranging from 6½-pound trimsaws to 30-pound giants.

WORM-DRIVE VS HELICAL-GEAR SAWS

When most of us think of a portable circular saw, we envision the saw that engineers refer to as a helical-gear model, such as the one shown *opposite, bottom.* But another gearing choice presents itself when you buy a portable circular saw: worm drive *(opposite, top)*. Gearing may sound like a purely mechanical point, but it makes a world of difference in the torque, size, use, and price of the tool.

Because it's geared lower, the blade of a worm-drive saw turns slower and develops much more torque than its helical-gear brother, making it less likely to bog down during a cut. Also, the thin-bodied worm-drive saw can cut in tighter quarters. Because of the distance between its blade and handle, you can reach about 6" farther across a cutting surface. Finally, with your hand more directly behind the blade, you maintain greater control over the direction of the blade with a worm-drive than with a helical-gear machine as shown *at left.*

A worm-drive saw, such as Milwaukee's 8¼" model, left, extends your reach over a helical-gear saw such as AEG's 8¼".

On the other hand, worm-drive saws weigh and cost about 50 percent more, and their oil-filled gear casings need occasional fill-ups.

Our advice: A helical-gear saw will handle nearly any home workshop job you can throw at it. But for a major construction project, such as adding on to your house, a worm-drive model may pay off (if you can handle its 16-plus pounds).

adjustment options: *pivot foot* or *drop foot.*

All worm-drive saws, as well as most helical-gear models, have pivot-foot mechanisms that lower the blade in an arching motion, as shown *at near right.* Drop foots, available on more-expensive helical gear models, consist of a mechanism near the front of the saw that allows you to lower the blade in a straight, vertical motion, as shown *at far right.*

The handle of a drop-foot saw remains in the same vertical plane no matter what the depth of the blade, giving you consistent balance in all cuts. Although worm-drives have pivot foots, your hand remains well behind the blade in deep and shallow cuts, thus affecting your balance very little.

(continued)

As you go from a full to light cut while using a rear-pivot portable circular saw, your hand position changes little. This proves to be a handling plus.

With a drop-foot saw, you can cut at various blade depths without changing your balance. The reason: The vertical alignment of your hand stays the same.

ROUND AND ROUND THEY GO: 34 PORTABLE SAWS

MANUFACTURER/ IMPORTER	MODEL NUMBER	BLADE SIZE (DIAMETER IN INCHES)	MAX. CUT DEPTH		FOOT TYPE[1]	AMPS	MOTOR/DRIVE ASSEMBLY					SERVICEABLE EXTERNAL BRUSHES	DOUBLE INSULATED	SAFETY FEAT.	CONST. MAT.[6]			BEAR.[7]		COUNTRY OF ORIGIN[9]	NET WEIGHT (LBS.)	SUGGESTED PRICE
			BLADE AT 90°	BLADE AT 45°			NO-LOAD SPEED (RPM)[2]	DRIVE[3]	BRAKE[4]	ARBOR LOCK	ARBOR SIZE[5]			SAFETY SWITCH	MOTOR HOUSING	FOOT	ARMATURE	ARBOR	BLADE POSITION[8]			
Aeg	PC 80-1*	8¼	3	2¼	D	13.5	6400	HG	N	Y	⅝	N	N	N	GN	A	B	B	RH	WG	12.5	259
Black&Decker	3051*	7¼	2 11/32	1 15/16	P	13.0	4300	WD	N	Y	D[5]	Y	N	Y	CA	S	B	B	LH	I	16.5	239
	3057	7¼	2 7/16	1⅞	P	13.0	5500	HG	N	Y	⅝	Y	N	Y	CA	S	B	B-R	RH	U	12.8	190
	3060	7¼	2 7/16	1⅞	P	13.0	5800	HG	Y	Y	⅝	Y	Y	Y	GN	A	B	B	RH	U	11.9	218
	3064	7¼	2 7/16	1⅞	U	13	5800	HG	Y	Y	⅝	Y	Y	Y	GN	A	B	B	RH	U	12.3	242
	7391	7¼	2 7/16	1⅞	P	10	5300	HG	N	N	⅝	N	Y	Y	P	S	S	S	RH	U	9.5	85
	7392	7¼	2 7/16	1⅞	P	10	5500	HG	N	N	⅝	N	Y	Y	P	S	B	S	RH	U	9.6	105
Bosch	1651	7¼	2 7/16	1 15/16	D	13.0	5500	HG	N	N	⅝	Y	Y	N	GN	A	B	B-R	RH	U	12.9	179
	1654	7¼	2 7/16	2	P	13.0	5800	HG	N	Y	⅝	Y	Y	N	GN	A	B	B-R	RH	U	10.9	179
Hitachi	PSM-9	9¼	3⅜	2½	D	14.6	5000	HG	N	Y	⅝	Y	Y	Y	P	A	B	B	RH	J	15.4	426
	C7SB	7¼	2⅜	1 27/32	P	13.0	5500	HG	E	Y	⅝	Y	Y	Y	P	CA	B	B	RH	J	10.6	214
Jepson	8218	7¼	2⅜	1¾	N/A	12/6	5800	N/A	N/A	Y	⅝	Y	Y	N/A	N/A	N/A	N/A	N/A	RH	N/A	11.4	205
Makita	4200 N	4⅜	1¼	⅞	P	7.5	11000	HG	N	N	20mm	Y	Y	Y	P	S	B	B	LH	J	6.2	225
	5007 NBA*	7¼	2⅜	1¾	P	13.0	5800	HG	E	Y	⅝	Y	Y	N	P	A	B	B	RH	J	11.0	233
	5077 B	7¼	2⅜	1⅞	P	13.0	4300	HY	E	Y	⅝	Y	Y	N	P	S	B	B	LH	J	13.9	246
	5201 NA	10¼	3¾	2½	P	12.0	3700	HG	E	N	⅝	Y	N	Y	CA	S	B	B	RH	J	18.3	589
	5820	7¼	2½	1 1/16	-	7.5	4000	N/A	N/A	N/A	⅝	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	J	7.7	175
Metabo	CS725	7¼	2 7/16	1 29/32	D	13.0	5800	HG	N	N	⅝	Y	Y	N	P	A	B	B-R	RH	U	11.5	205
Milwaukee	6365*	7¼	2⅜	1 25/32	D	13.0	5800	HG	N	Y	⅝	Y	N	N	GN	A	B	B-R	RH	U	11.5	195
	6460	10¼	3 15/16	2⅞	D	15.0	5200	HG	N	N	¾	Y	N	N	GN	S	B	B-R	RH	U	19.5	395
	6378*	8¼	2⅞	2¼	P	15.0	4400	WD	N	Y	D	Y	N	N	GN	S	B	B-R	LH	U	17.2	316
	6305	6¼	2 3/16	1 7/16	P	B	3400	HG	N	N	20mm	N	N	Y	P	S	S	S	RH	J	8.0	299
Porter-Cable	345	6	1 15/16	1 9/16	P	9.0	6000	HG	N	Y	½	Y	Y	N	GN	S	B	B-R	LH	U	9.0	170
	315-1*	7¼	2 7/16	1 29/32	D	13.0	5800	HG	N	N	⅝	N	Y	N	GP	A	B	B-R	RH	U	12.5	195
	314	4½	1 5/16	1 1/16	P	4.5	4500	WD	N	N	⅜	Y	N	N	CA	S	B	B	RH	U	7.0	225
Ryobi	W-620	7¼	2 7/16	1 23/32	D	130	5500	HG	N	Y	⅝	Y	Y	N	PG	S	B	B+S	RH	J	11.0	215
	W-201S**	16¼	6 7/16	4⅜	D	12.0	2500	HG	E	Y	1	Y	N	N	P	S	B	B	RH	J	30.8	647
Sears	10925	7¼	2¼	1¾	P	12.0	5000	HG	N	Y	⅝	N	Y	Y	TP	S	B	B-R	RH	U	13.8	77
Skil	77*	7¼	2⅜	1 15/16	P	13.0	4400	WD	N	Y	D	Y	N	N	CA	S	B	B	LH	U	16.3	242
	5656	7¼	2 7/16	1⅞	P	13.0	5500	HG	N	Y	⅝	Y	Y	N	GN	S	B	B-R	RH	U	11.7	205
	5510	5½	1¾	1 5/16	P	6.5	4000	HG	N	N	½	Y	Y	N	GN	S	B	B-R	LH	U	65	158
	5250	7¼	2 7/16	1 15/16	P	10.0	4600	HG	N	N	⅝	Y	Y	Y	GN	S	B-S	S-S	RH	U	11.0	76
	5660	8¼	2 15/16	2⅛	P	13.0	5800	HG	N	Y	⅝	Y	Y	N	GN	S	B	B-R	RH	U	130	223
Wen	963	7¼	2⅜	1⅞	N/A	11.0	5100	N/A	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.25	60

* Similar machines available in both 7¼" and 8¼" sizes.
** Makita makes similar machine

1. (D) Drop Foot; (P) Pivot Foot; (U) Unique
2. No-load speed determined when machine turns free (not cutting)
3. (HG) Helical Gear; (WD) Worm Drive; (HY) Hypoid
4. (N) None; (E) Electric Brake
5. (D) ⅝" arbor with diamond knock-out
6. (A) Aluminum; (CA) Cast Aluminum; (GN) Glass-Filled Nylon; (GP) Glass-Filled Polyester; (P) Polycarbonate Plastic; (TP) Thermo-Set Plastic.
7. (B) Ball Bearing; (R) Roller Bearing; (S) Sleeve Bearing
8. (RH) Right-hand (LH) Left-hand
9. (I) Italy; (J) Japan; (T) Taiwan; (U) USA; (WG) West Germany

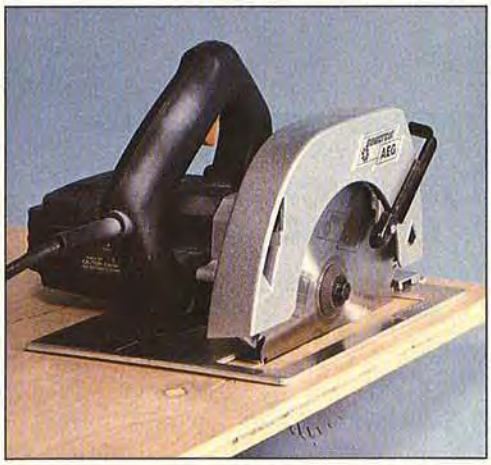
CHECK OUT CONSTRUCTION

Before buying a saw, pay special attention to its bearings and foot. Ball bearings and roller bearings protect the motor armature and arbor from damaging friction. Inexpensive sleeve bearings strain a saw and don't last long.

Test a foot by picking up the saw in one hand, the foot in the other. Try to flex the foot; if it gives at all, don't buy the saw.

Milwaukee's model 6365, near right, has a ball-bearing armature, and a ball- and roller-bearing arbor. Avoid saws with inexpensive sleeve bearings, which cause damaging friction.

AEG's model PC 80-1, far right, features ball-bearings in both the armature and arbor. It cuts deeper—3" at 90 degrees—than any other 8¼" saw we tested.

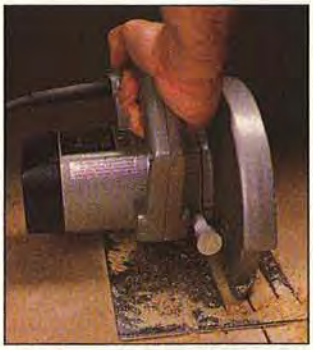


TWO SAFETY FEATURES WE LIKE

To make pocket cuts with most saws, you retract the blade guard with a lever that's uncomfortably close to the spinning blade. Not so with Skil's model 5656. It has a remote lift lever at the top of the saw.

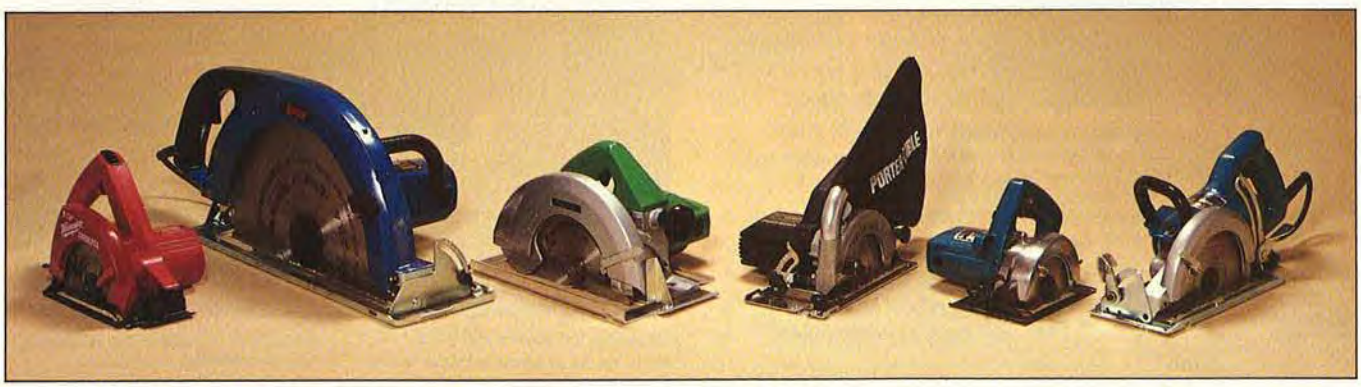
The cord for the Porter Cable 315-1 attaches to the machine's side, so it can't catch in the kerf.

Near right: Skil model 5656
Far right: Porter-Cable 315-1



PORTABLES FOR EVERY PURPOSE

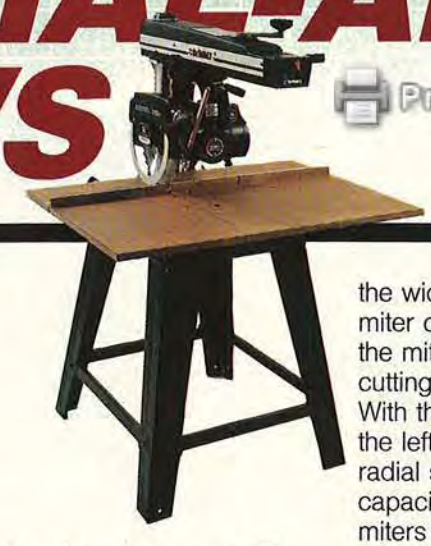
Portable circular saws can handle nearly any size of cutting job that you can imagine. Shown from the left are Milwaukee's battery-powered 6¼" model 6305, Ryobi's 16¼" model W-201S, Hitachi's 9¼" model PSM-9, Porter-Cable's 6" model 345 Saw Boss, Makita's 4⅜" model 4200 N, and Makita's 7¼" hypoid-drive model 5077 B. ■



RADIAL-ARM SAWS

Print this article

If you can figure the angle, a radial saw most likely can cut it. And with a bevy of attachments, this versatile cutting machine becomes a mini-workshop.



HOW MUCH CAN A RADIAL HANDLE?

Manufacturers size radial saws according to the largest diameter blade they will accommodate: A 10" saw (the most popular size for home shops) handles blades up to 10" in diameter. The saw's maximum cutting depth—the distance between the bottom of the blade and the motor housing—increases with blade size.

Generally, 10" saws will cut stock up to about 3" thick; 12" saws, up to 4" thick. But you'll pay at least twice as much to get the extra inch of capacity of a 12" saw.

The length of the arm and the distance the saw can travel on it determine the width of crosscuts and miter cuts it can make. As the miter angle increases, cutting width decreases. With the blade offset to the left side of the arm, a radial saw has less capacity on left-hand miters than on right-hand miters—unless you can set the fence closer to the rear of the table.

Arm length and saw travel also govern rip capacity. If you plan to rip 4'-wide panels, you'll need a saw with a maximum rip capacity of 24". The chart on page 36 shows the cutting capabilities of the saws we tested.

ANATOMY OF A RADIAL-ARM SAW

The drawings *opposite* show how the radial saw's unique design allows you to position the saw blade at any angle and in any position above the work table (within reach of the saw's arm).

The *motor* and *blade assembly* pivot in a *yoke.* The yoke, in turn, pivots on a *roller carriage,* which rides on tracks along the *radial arm.* The arm itself pivots on a *column,* allowing you to position it for left- and right-hand miter cuts.

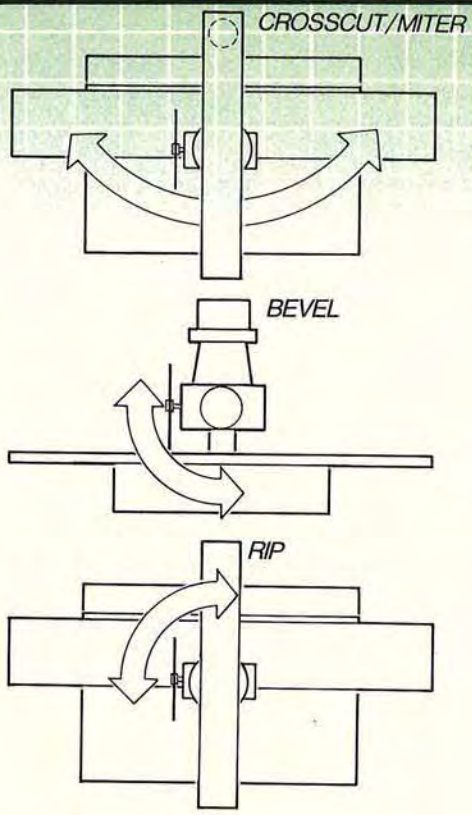
HOW SAFE ARE THEY?

When crosscutting, a radial saw's blade rotates clockwise, which pushes the stock down and back against the fence as you pull the motor/blade assembly toward you.

This cutting action, called *climb cutting,* can force the blade toward you if it binds and grabs the wood, or if you try to cut too fast. In some cases, the blade may actually walk up and over the wood.

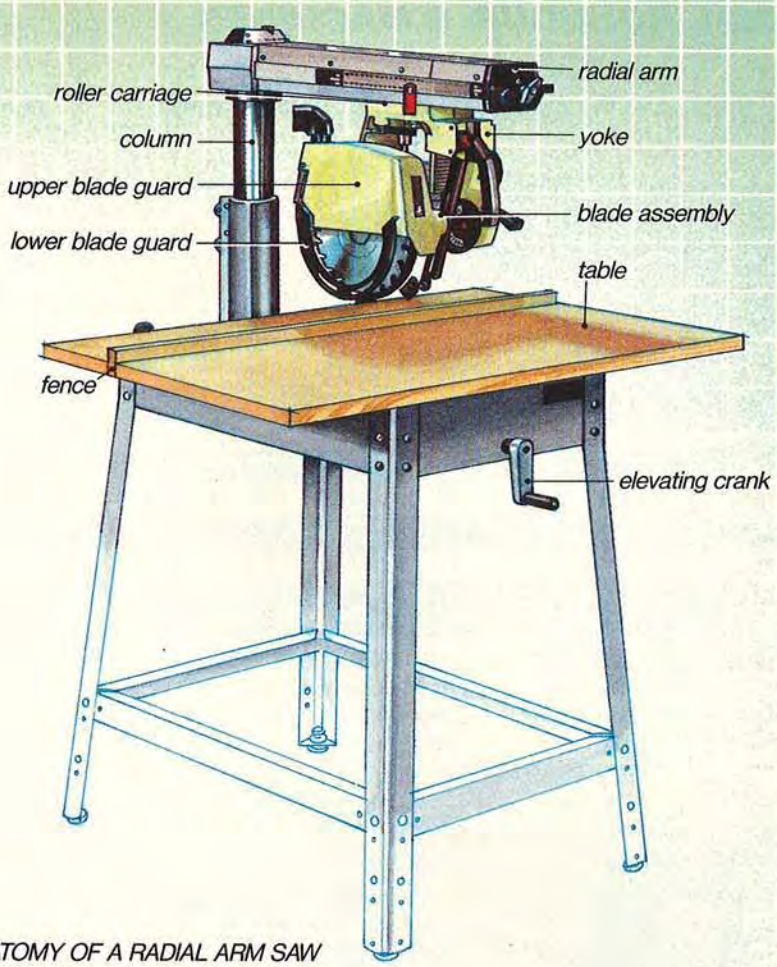
Usually the motor will stall before the saw does this—but accidents can occur when the saw carriage unexpectedly

Dewalt's 12" contractor's saw features an automatic blade brake that stops the blade the moment you turn off the switch.



***Crosscuts** and **miters** are what a radial-arm saw does best. To make **bevel cuts,** tilt the motor/blade guide assembly.*

*For **rip cuts,** which aren't a radial saw's forte, you must turn the blade guide assembly 90 degrees and push stock through the blade.*

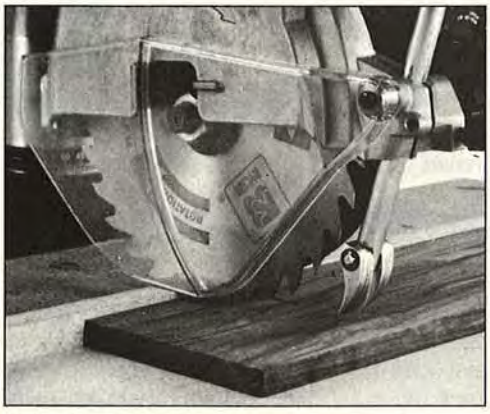


ANATOMY OF A RADIAL ARM SAW

jumps forward or pushes against the operator's sawing arm. This may twist the operator's body, forcing his left hand (holding the stock) into the path of the blade.

For this and other safety reasons, radial saws come equipped with upper and lower blade guards and anti-kickback pawls that dig into the wood when it starts to kick back.

Other safety features normally found on radial saws include automatic or manual blade brakes and keyed locking switches. A few radial-arm saws offer optional carriage-return mechanisms. *(continued)*



Unlike thin steel guards on most saws, Ryobi's plastic lower blade guard doesn't catch in saw kerfs cut in the fence. The anti-kickback pawl, in front of the blade, stops the board if it starts to lift. A splitter guide located behind the saw blade holds the saw kerf open to help keep the blade from binding in the cut.

Keyed switch lock on Dewalt's 10″ saw prevents unauthorized use. Delta, Ryobi, and Sears also offer this feature. A large, slap-type OFF switch means you can turn off the saw quickly in an emergency.

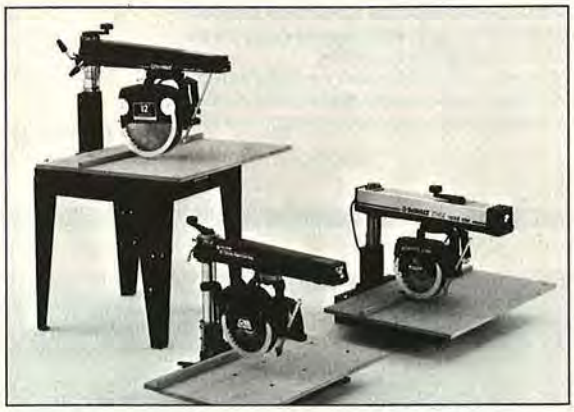
RADIAL ROUNDUP: 8 MACHINES

Radial arm saws

MANUFACTURER/ IMPORTER	MODEL NUMBER	BLADE SIZE	CUTTING CAPACITY				INDEX STOPS		MOTOR						MAT.[2]		SIZE (WxDxH)	TABLE (WxD)	WEIGHT	COUNTRY OF ORIGIN[4]	SUGGESTED PRICE
			DEPTH OF CUT AT 90°	DEPTH OF CUT AT 45°	MAXIMUM CROSSCUT	MAXIMUM RIP	MITER	BEVEL	TYPE[1]	VOLTS	AMPS	NO-LOAD BLADE SPEED (RPM)	ACCESSORY SPINDLE	ARM	COLUMN BASE						
Black & Decker	1712	10	2 13/16	2	13 5/8	19 7/8	0,45 L&R	0,45,90	I	120	11	3450	N	CA	CA	34x28x24[3]	34x21	87	I	469
Delta	33-890	12	3 3/4	2 5/8	14 3/8	24 1/4	0,45 L&R	0,45,90	I/T	115/230	11/5.5	3450	N	CI	CI	30x32x63 1/2	25 1/2x30	300	U	1817
	33-990	10	3	2 1/4	12 3/4	24	0,45 L&R	0,45,90	I/T	115/230	11/5.5	3450	Y	CI	CI	42x37x53 1/2	42x24 3/4	178	U	764
DeWalt	7790	12	3 1/8	2 5/8	18	29	0,45 L&R	0,45,90	I/T	120/240	17/8.5	3450	N	CI	CI	38 5/8x34 1/2x55 1/2	38 1/2x29	235	I	1449
	7749	10	2 1/8	2 1/8	14 1/2	24 11/16	0,45 L&R	0,45,90	I/T	120	12.5	3450	N	CI	CI	36 1/8x31 1/2x24[3]	36 1/8x24 5/8	136	I	799
	7770-10	10	2 1/8	2 1/8	14 1/2	24 11/16	0,45 L&R	0,45,90	I/T	120/240	17/8.5	3450	N	CI	CI	53 1/2x36 1/8x24 5/8	N/A	150	I	1099
Ryobi	RA200	8 1/4	2 1/8	1 15/16	10 15/16	19 7/8	0,22 1/2L 22 1/2,45R	0,45,90	U	115	11	5000	Y	FS	CA	27 1/2x32x20 1/4[3]	27 1/2x21 3/8	53	U	500
Sears	19751[5]	10	3	2 1/4	15 1/2	26	0,45 L&R	0,45,90	I	120/240	11/5.5	3450	Y	CA	CI	44x36x57	44x27	278	U	550

1. (I) Induction; (I/T) Induction with Totally Enclosed, Fan-Cooled motor; (U) Universal
2. (CI) Cast Iron; (CA) Cast Aluminum; (FS) Formed Steel
3. Without stand
4. (I) Italy; (U) USA
5. Electronic digital readout

Delta's radials: 12" Model No. 33-890, left; Model No. 33-990, right.



***From left:** DeWalt 7790, Black & Decker 1712, DeWalt 7749.*

WHAT ELSE CAN A RADIAL SAW DO?

Besides handling just about every operation a tablesaw will perform, a radial-arm saw also can stand in for a variety of other power tools. With accessories that attach to the motor arbor or accessory shaft, a tablesaw lets you rout, mold, shape, joint, disk-sand, belt-sand, and drum-sand. And that's not all. You also can perform horizontal boring, buffing, even polishing.

This doesn't mean, however, that you'll find all these attachments as convenient to use as single-purpose tools. If you already own a router or a belt sander, for example, you probably won't set up a radial arm for those jobs. Even so, it can save you lots of time in cutoff work alone.

Performax's S/T drum sander attaches to a radial arm or to a stand the company offers.

DO THE CONTROLS WORK SMOOTHLY?

Radial-arm saws have eight basic controls to let you set the saw blade where you want it and keep it there: the elevating crank, radial-arm clamp, radial-arm index release, carriage lock knob, yoke clamp, yoke index release, bevel clamp, and bevel index knob. The anatomy drawing on page 35 identifies these controls. Control locations may differ from saw to saw.

If you plan to change blade positions often, look for "up-front" controls. Delta saws, for example, have convenient control positions, plus positive locking and clamping mechanisms.

Column-mounted elevating crank and arm controls on the 12" DeWalt are hard to reach, but we like their solid, positive operation.

WHAT'S THE ARM MADE OF?

Delta's unique "turret arm" design rotates the arm 360 degrees above the worktable, allowing full-table capacity for left-hand miters.

Look for solid arm construction and a smooth-gliding carriage. You'll find arms made of cast iron, cast aluminum, or heavy-gauge formed steel. Cast iron has the greatest rigidity and durability.

The DeWalt saws and the 10" Delta have four ball-bearing carriage rollers that ride on internal channels milled into a heavy cast-iron arm. With this sturdy design you're unlikely to damage the tracks accidentally.

The 12" Delta 33-890 has concave roller bearings that ride on replaceable steel track rods recessed into a cast-iron turret arm. When the carriage wears and loosens, you simply rotate the rods to expose a smooth, unused surface.

DOES THE MOTOR MATTER?

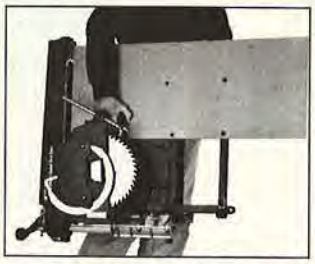
All radial saws use standard induction motors, except the Ryobi RA-200. It uses a brush-type universal motor. Although we're still skeptical of the life expectancy of these small, high-speed motors on stationary tools, the one on the RA-200 has an advantage. Its small size gives this 8¼" saw a 2⅛" cutting depth—almost as much as most 10" saws. A built-in gearbox reduces the blade speed.

Some radial saws use totally enclosed, fan-cooled (TEFC) motors; others use open, drip-proof motors. In a shop environment, sawdust will find its way into open motors and shorten their lives. That's why we prefer TEFC motors.

PORTABLES: SAWS YOU CAN TAKE WITH YOU

If you don't have shop space for a full-size radial saw, check out one of the compact benchtop models. The cast-aluminum arm, column base, yoke, and motor housing on the 10" Black & Decker 1712 contribute to its light 65 pounds. The fold-up feature, shown *at right,* lets you to store it in a small space or easily haul it around.

The 8¼" Ryobi RA-200—a good performer for its size—won't fold flat like the Black & Decker, but you can easily carry this 53-pounder around the house and yard for on-site work. ■



Black & Decker folding saw: a compact, walkaway winner.

TABLESAWS

Print this article

WHICH SAW IS RIGHT FOR YOU?

Most tablesaws can be classified as direct-drive, contractor's style, and cabinetmaker's style. As you'll see, the more you spend on a saw, the more heavy-duty components and cutting accuracy you can expect.

DIRECT-DRIVE ($280–$500)

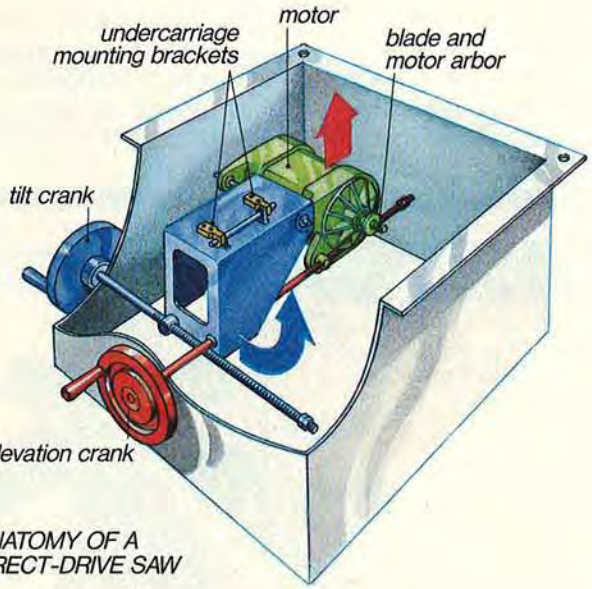
As shown *at right* in the illustration of the Sears model 29805 direct-drive tablesaw, the blade arbor and motor arbor are one, meaning that any motor vibration transmits directly to the blade. Lightweight elevation and tilt mechanisms, along with the two small brackets that hold the entire mechanism to the tabletop, contribute to blade movement.

Because of their light weight and potential for blade movement, we think these saws are better suited to construction carpentry than to woodworking.

CONTRACTOR'S STYLE ($345–$980)

A few years after Delta introduced its contractor's saw in 1970, Taiwanese manufacturers began busily churning out copies of this successful model.

The simplified illustration of the Delta contractor's saw *opposite, top* reveals heavier motor and blade supports, tilt and elevation controls than those on direct-drive machines. The motor hangs out the rear of the saw, with a belt that softens the vibration of the motor and absorbs sawing stress.



ANATOMY OF A DIRECT-DRIVE SAW

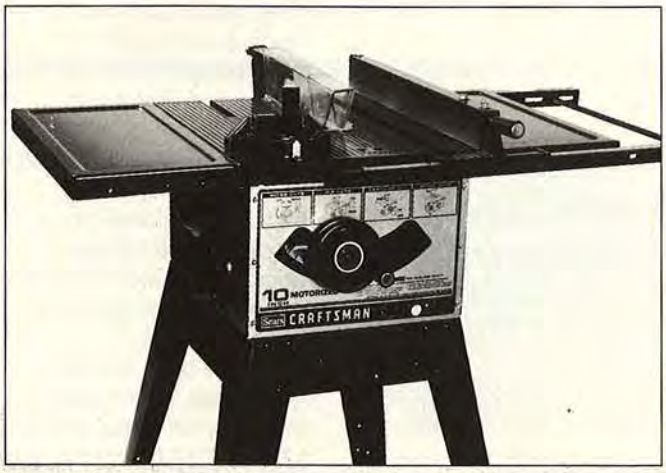
CONSTRUCTION BASICS

The fit and finish of a tablesaw tell lots about its overall quality. For starters, the tabletop should be milled smooth and flat. And, the miter gauge should slide freely without side-to-side slop.

To check the machine's inner mechanisms, set the blade for a 20–30° bevel cut, then take hold of the arbor-motor assembly. If this moves, you can bet the blade moves, too.

MOTOR MATTERS

The last thing you want while ripping a board is to have the blade slow down or stall. That's why we recommend a motor with a minimum of 1½ horsepower. Because tablesaws create a lot of dust, also look for a totally enclosed, fan-cooled motor.



On the Sears model 2905, the blade arbor and motor arbor are one, meaning any motor vibration transmits directly to the blade.

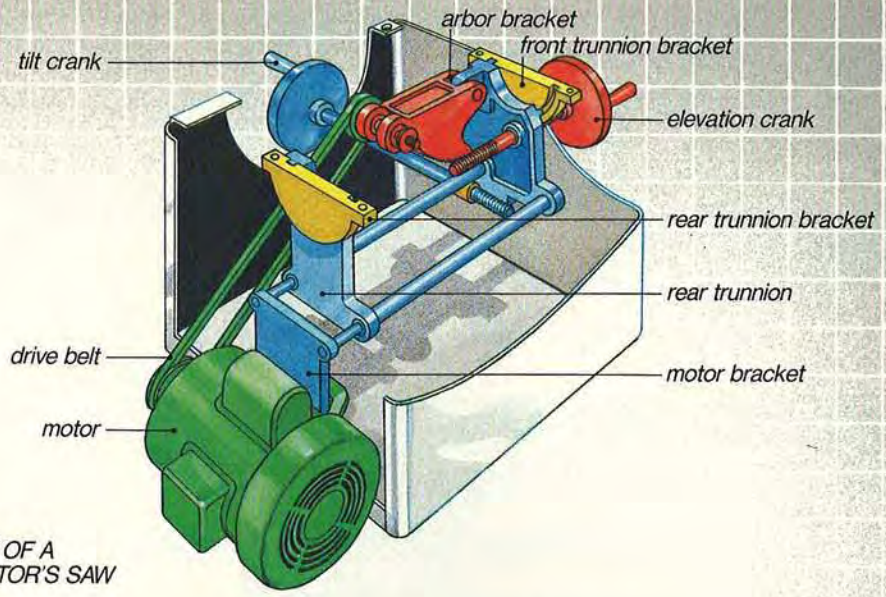
After a spouse, a tablesaw can be a woodworker's most important choice!

CABINETMAKER'S STYLE ($850–$1,850)

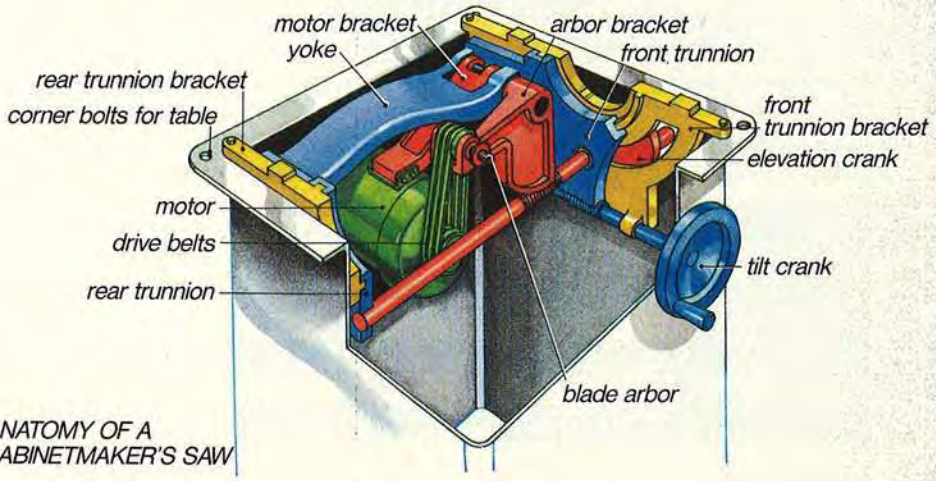
Weighing in at around 450 pounds, these machines have massive cast-iron tilt and elevation controls, as typified by the inner workings of the Jet CTAS-10-1 shown *at lower right.* All that weight translates to stout positioning of the blade at any height or angle, excellent vibration absorption, and longer machine life.

Unlike the two other types of saws, this machine's cabinet (rather than its tabletop) supports the undercarriage assembly. To align the miter gauge-slot parallel with the blade, simply loosen four corner bolts and adjust the table.

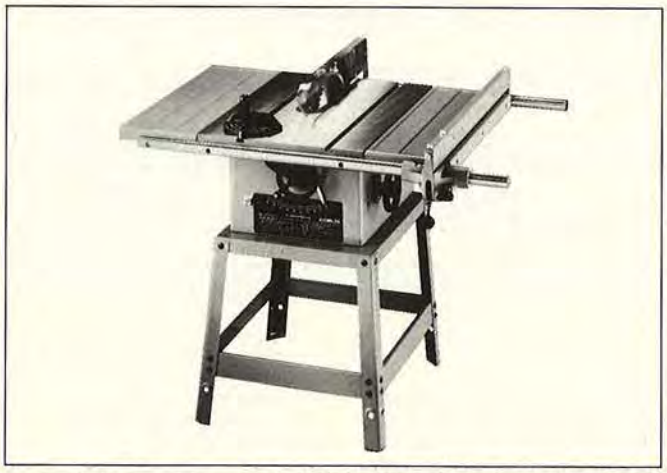
Most of these saws require 220 voltage—a consideration if you don't have this service in place.



ANATOMY OF A CONTRACTOR'S SAW



ANATOMY OF A CABINETMAKER'S SAW



Contractor's-style Delta 34-444, above, has a heavier motor, blade, and elevation supports than direct-drive machines.

Cabinetmaker's-style Delta 34-763 Unisaw, above, weighs in at about 450 pounds—thanks to its heavy-duty components.

33 SAWS SHOW THEIR METAL

MANUFACTURER/ IMPORTER	MODEL NUMBER	BLADE SIZE[1]	NO-LOAD BLADE SPEED (RPM)	(B)ENCH TOP OR (S)TATIONARY	TABLE TYPE[2]	TABLE SIZE (WxD)	WEIGHT	RIP CAPACITY	ACCEPTS DADO BLADES	CUTTING DEPTH	FENCE RAIL[3]	DRIVE MECHANISM (D)IRECT/(B)ELT	STYLE[4]	MOTOR				COUNTRY OF ORIGIN[10]	SUGGESTED PRICE
														TYPE[5]	AMPS	HORSEPOWER	VOLTS		
AMT	4571	10	3450	S	CI	40½ x 27[6]	231	25	Y	3⅛	T	B	H	CI	1½	18/9	110/220	T	445
Black & Decker	9419	8, ½" arbor	3600	B	FS	26½ x 15 5/16	35	9½R 12¼L	Y	1¾	F	D	B	I	1	7.5	120	U	257
Bridgewood	TSC-10B	10	4000	S	CI	27 x 40	295	40	Y	4¼	AI	B	H	CI	N/A	N/A	110/200	T/U	639
	BW-10TASV	10	4200	S	CI	36 x 27	485	50	Y	3	T	B	N/A	CI	N/A	N/A	220	T/U	1595
Delta	34-444	10	4000	S	CI	40 x 27[6]	220 w/mtr,std	25	Y	3⅛	T	B	H	I	1½	U	115/230	U	896
	34-740	10	3450	S	CI	38⅜ x 22¼[6]	152	25	Y	27/16	T	D	B	I	1	U	110	T	577
	34-670	10	5500	S	CI	22¼ x 38⅜[6]	130	24	Y	3⅛	FI	B	B	U	N/A	15	115	T	501
	34-764 Unisaw[7]	10	4000	S	CI	27 x 36[6]	464	25	Y	3⅛	T	B	B	I	5	17	220	U	2045
	34-330	8¼	4500	B	P	26 x 20	40	12	Y	2¼	B	D	B	S	N/A	13	115	U	343
Foley-Belsaw	4900900[8]	10	3450	S	CI	40 x 27[6]	355	25	Y	3½	FI	B	H	CI	1¾	16/15.5	220/110	U	1099
General	350-1	10	4000	S	CI	36 x 28	415	25	Y	3⅛	B	B	B	CI	3	14	110/220	C	1330
Grizzly	G1022	10	4200	S	CI	41 x 27[6]	255	25	Y	3⅛	T	B	B	CI	1½	14/7	110/220	T	345
	G1023 3NP	10	4140	S	CI	36 x 27[6]	500	26R 12L	Y	3⅛	AI	B[9]	B	CI	3	18	220	T	895
Inca	250	10, 20mm arbor	3450	B	CAA	20 x 33¾	66	23¼	Y	3 5/32	AI	B	H	CI	1½	1618	115/230	S	999[14]
Jet	JCS-10	10	4350	S	CI	27 x 40[6]	333	30	Y	3	EA	B	B	CI	2	31	115	T	1199
	JTS-10SL	10	4500	S	CI	35¼ x 23	232	25R 15L	Y	3⅛	T	B	H	CI	1½	20	110	T	626
	CTAS-10-17	10	4200	S	CI	20 x 27	407	26R 15½L	Y	3	T	B	B	CI	3	17	230	T	1836
Kity	100618	10	4900	S	CAA	26¾ x 20½[11]	146	29	Y	3¼	FI	B	B	CI	2	10	220	F	1495
Lobo	TS0010	10	3450	S	CI	27 x 20	245	25	Y	3⅛	T	B	H	CI	3	14	110	T	395
Makita	2708W	8¼	4500	B	CAA	26 x 18⅛	37½	12	Y	2½	T	D	B	U	2	12	110	J	490
	2711	10	3800	S/B	CI	27¼ x 23½	71½	25	Y	3 9/16	T	D	B	U	2	12	110	J	819
Mini-Max/ Teknarbor	S250[12]	10	3500	S	FS	28 x 33	440	25	N	3½	T	B	B	CI	3	10	220	I	1295
Powermatic	66	10	N/A	S	CI	38 x 28	450	25	Y	3⅛	T	B	B	I	3	15	220	U	2121
	66TA	10	3600	S	CI	38 x 28	450	25	Y	3⅛	T	B	B	CI	3	25.6/ 12.8	110/220	U	1835[13]
Ryobi	BT-2500	10	4500	B	CA	27 9/16 x 18 29/32	39½	13¼	Y	3 9/16	B	D	B	U	2	13.8	110	J	613
Sears	29805N	10	N/A	S	CAA	44 x 27	126	24	Y	2½	AI	D	B	I	1	N/A	110	U	330
	29803	10	N/A	S	CI	20 x 27	N/A	24	Y	3⅜	N/A	B	N/A	N/A	1	N/A	115	N/A	400
Skil	3102	8¼	5500	B	CA	27 x 16	39	12	Y	2 1/16	B	D	B	S	2	10	110	U	270
Total Shop	90050	10	4150	S	CI	30 x 23	195	29	Y	3	T	B	H	N/A	1½	14/7	110/220	N/A	379
	927	10	[15]	S	CI	38 x 28	528	30	Y	3¼	T	B	B	N/A	3	18	220	N/A	1095
Transpower	TS200[11]	10	4200	S	CI	36 x 27	500	33½	Y	3	T	B	B	CI	N/A	18	220	T	945
Value Craft	8025	10	3450	S	CI	17 x 20	139	25	Y	2½	T	D	B	CI	1⅛	10	115	T	390
	8000A	10	3450	S	CI	20⅛ x 27	222	25	Y	3¼	T	B	H	CI	1½	18/9	115/230	T	600

1. All blades have ⅝" arbor unless indicated otherwise
2. (CI) Cast; (CA) Cast Aluminum; (CAA) Cast Aluminum Alloy; (P) Plastic; (FS) Formed Steel; (EA) Extruded Aluminum
3. (B) Built-In; (T) Tubular; (AI) Angle Iron; (FI) Flat Iron
4. (B) Built-In; (H) Hang Behind
5. (CI) Capacitor-Start Induction; (S) Series; (I) Induction
6. With extension wings
7. Similar models with a variety of accessories are also available.
8. Similar model with 1¾ HP motor is available.
9. Uses triple belts.
10. (C) Canada; (F) France; (I) Italy; (J) Japan; (S) Switzerland; (T) Taiwan; (U) USA; (T/U) Taiwan saw, USA motor.
11. Optional sliding table is available
12. Sliding table and sliding table-scoring models are available.
13. Includes 50" Vega fence
14. Not including stand or motor
15. Two speeds: 4000 and 5000

TABLE MANNERS

The table must form a perfectly flat plane—something you can check with a straightedge. Although we didn't find a warped table on any of the models we tested, we've talked with plenty of readers who have. Our advice: Ask for a new table; a reputable dealer will supply one free of charge. Likewise, the table extensions should continue the flat plane.

Although cast-iron extensions weigh more, you'll appreciate their sturdiness over formed-steel versions. With iron wings, solid extensions can't hurt your fingertips; the grate type can.

It used to be that you could have a sliding table only if it came standard on your saw, and only two affordable models offered that choice: the Makita 2711, shown *at upper right,* and the Kity 100618. Now, Kity and Robland (a Belgian manufacturer of combination machines) make sliding tables that adapt to most tablesaws.

Farris Machinery, the U.S. importer of French-made Kity equipment, sells the Kity sliding table for $495. The beefier Robland unit, available through Laguna Tools, sells for $695.

You'll enjoy precise and controlled cutoffs using a sliding table such as the one on Makita's model 2711.

Ouch! When adjusting the fence you can pinch your fingers in grate-type extensions. Solid extensions look better, too.

SHOULD YOU UPGRADE THE FENCE?

Only three of the tablesaws we tested—the Powermatic 66 and 66TA, and the Foley-Belsaw 4900900—have standard fences that lock in place quickly and accurately.

For the other saws, you may decide to invest in an aftermarket rip fence. If so, you'll want a tablesaw whose ripping capacity doesn't change as the blade tilts. For example, the General 350-1, Delta 34-763, and Powermatic 66 have identical rip widths at 45° and 90°, meaning you can trust the fence's measurement reading at any angle. For all the other saws, you have to set the fence for accurate 90° cuts, then measure the blade-to-fence distance for any bevel cuts.

The fence on the Foley-Belsaw 4900900 is lighter duty than a Biesemeyer or Vega, but works just as accurately.

INCA: A SAW WITH A DIFFERENT SLANT

Before the advent of tilting-arbor tablesaws during the late 1930s, most saws consisted of a fixed blade around which a table tilted for bevel cuts. Today, the Swiss-made Inca model 250 continues the tilting-table tradition in a precision-made, compact saw that fits the needs of craftsmen who work mostly with smaller pieces of solid stock.

We found the machine to be accurate, and we like the unobtrusive manners of its swing-arm blade guard. However, bevel-ripping large sheet goods is a cumbersome task. ■

Inca's tilting table: Euro-saw design with lots of precision for cutting small workpieces. Price? About $1,600 (as shown).

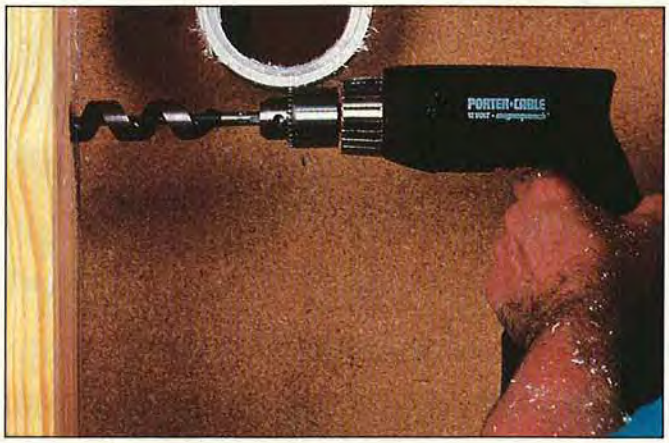
CORDLESS DRILL/DRIVERS

DO YOU NEED A DRILL, A DRIVER, OR BOTH?

Print this article

Drills, drivers, drill/drivers, driver/drills—what's the difference between all these pistol-shaped power tools? Not all manufacturers agree on nomenclature, but as we see it, a *drill* is meant only for drilling, a *drill/driver* has a chuck but turns slowly enough to drive screws, and a *driver* has no chuck and is used only for driving screws.

Some woodworkers prefer the luxury of having separate drill-only *and* drive-only machines, but in most home shops a combination tool serves perfectly well. Let's look at a cordless drill/driver to see how it works.

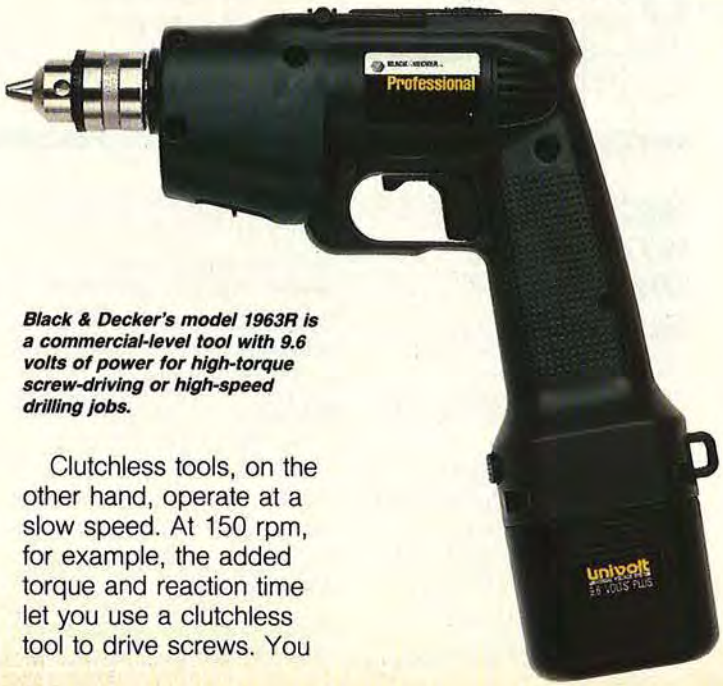


Porter-Cable's brawny model 9850 Magnequench, above, left, produces 12 volts of power, more than most of the machines we checked out. Skil's Top Gun line, above, includes two models: the 2535:02 (7.2 volts, $152) and the 2535:04 (12 volts, $231).

COMMERCIAL VERSUS CONSUMER MODELS

Unfortunately for the pocketbook of the typical home woodworker, all true drill/drivers (those with adjustable clutches) are commercial models that list for $140–$285. However, the price tags may not be out of reach if you take the drill/drivers' versatility into account. And remember, across the country companies are in a frenzied frame of mind to discount power tools these days.

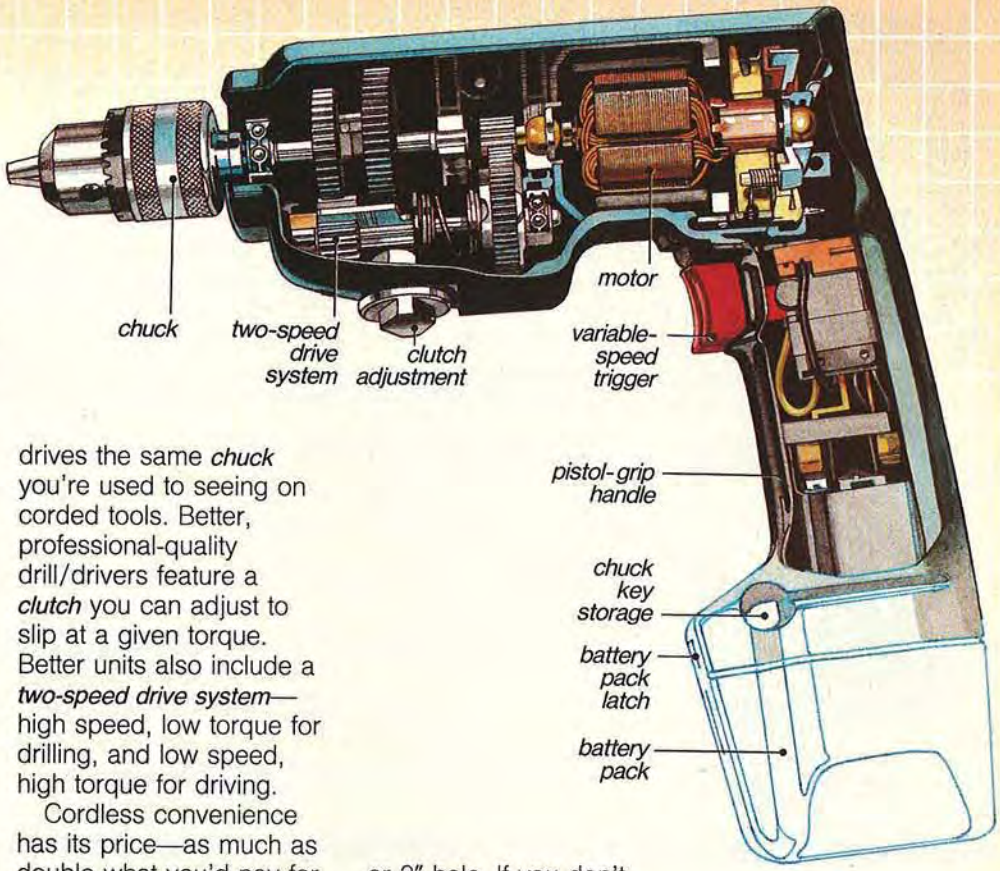
As noted, we think a clutch is the feature that "makes" a drill/driver. It lets you stop the movement without having to hope you can sense when the screw is about to break through your workpiece. It also permits you to set various types of screws into materials of varying densities. For drill-only jobs, you lock out the clutch.



Black & Decker's model 1963R is a commercial-level tool with 9.6 volts of power for high-torque screw-driving or high-speed drilling jobs.

Clutchless tools, on the other hand, operate at a slow speed. At 150 rpm, for example, the added torque and reaction time let you use a clutchless tool to drive screws. You

Drill holes, or drive and remove screws—these hardworking, go-anywhere mini-machines put the power of a twister right in the palm of your hand.



ANATOMY OF A DRILL/DRIVER

As you can see in our cutaway drawing *at right,* cordless drills and drivers are bulkier than their corded kin. That's because instead of pulling power from a 110V AC cord, they draw 12 or fewer volts of direct current from a ***battery pack*** that you usually can remove to recharge.

The battery pack delivers juice via circuitry in the tool's ***pistol-grip handle*** to a ***trigger*** that meters power to the ***motor.*** On inexpensive models, the motor direct-drives the same ***chuck*** you're used to seeing on corded tools. Better, professional-quality drill/drivers feature a ***clutch*** you can adjust to slip at a given torque. Better units also include a ***two-speed drive system***—high speed, low torque for drilling, and low speed, high torque for driving.

Cordless convenience has its price—as much as double what you'd pay for a corded tool. And cordless units can't do as many jobs, either. Don't expect a cordless' 9.6-volt motor to drill a smooth 1" or 2" hole. If you don't plan to take a tool more than a few feet from your workbench, you may be better off in the long run with a corded model.

won't get the consistent results of a clutch, but the trade-off is money in your pocket, especially if you expect to do a lot more drilling than driving.

In most instances, we recommend commercial tools for high quality. But if you won't use a drill/driver extensively or if precision isn't critical, a consumer model may make the most sense when you compare prices.

Consumer tools can cost less than half as much as their commercial counterparts, but they may lack the power, precision, and the clutch and removable battery featured in good-quality commercial models. In some instances it may be wise to buy two or three consumer tools for the price of one commercial unit. The consumer tools won't work as well or last as long, but you can have the convenience of always leaving one charging.

(continued)

Panasonic calls model EY503B, above, a "drill & driver"; low speed and lack of a chuck suit it for driving only. Model EY571B, right, is a true drill/driver.

37 HARD-DRIVING DRILLS

MANUFACTURER/ IMPORTER	MODEL NUMBER	TOOL TYPE[1]	BATTERY TYPE[2]	CHARGE RATE[3]	CHARGING TIME (HRS.)	BATTERY VOLTS	CHUCK TYPE[4]	SPEED CONTROL				STANDARD EQUIPMENT			TOOL WEIGHT	COUNTRY OF ORIGIN[7]	SUGGESTED PRICE
								(M)ECHANICAL OR (E)LECTRICAL	NUMBER OF SPEEDS	NO-LOAD RPM	CLUTCH	DRIVER BITS	BIT STORAGE	CASE			
AEG	EZ560	D/D	R	Q	1	7.2	G	M	2	300/900	Y	Y	N	N	3¼	J	199
	EZ1381	D/D	R	Q	1	9.6	G	E	2/Var.	0-350/0-1000	Y	N	N	N	4	J	249
	ABSE-15	D/D	R	Q	1	12	G	E	2/Var.	0-370/0-1000	Y	Y	Y	Y	4.4	WG	399
Black & Decker	1923K	D/D	R	Q	1	7.2	G	M/E	2/Var.	0-300/0-600	N	Y[5]	Y	Y	3½	U	195
	9020	D/D	B	S	3	6.0	G	E	2	170/400	N	N	N	N	2½	U	62
	9013	D/D	B	S	3	7.2	G	E	2	300/600	N	Y	Y[5]	N	2	U	92
Bosch	3000 VSRK	D	R	Q	1	9.6	G	M/E	2	0-400/0-900	N	Y	Y	Y	3¼	U	215
	3050 VSRK	D/D	R	Q	1	9.6	G	M/E	2	0-400/0-900	Y	Y	Y	Y	4	U	235
Freud	7238RC	D/D	R	Q	1	7.2	G	M	2	250/600	N	N	Y	Y	3	T	138
	9638VRC	D/D	R	Q	1	9.6	G	M/E	2/Var.	0-400/0-1100	Y	N	Y	Y	3½	T	202
Hitachi	DRC-10	D/D	R	Q	1	7.2	G	M	2	300/650	Y	Y	Y	N	3⅓	J	189
	D10DFK	D/D	R	Q	1	9.6	Keyless	M/E	2/Var.	0-400/0-1100	Y	Y	Y	Y	3¾	J	292
	DV10DA	D	R	Q	1	12.0	G	M/E	2	750/12000	N	N	Y	Y	3½	J	305
Jepson	2415V	D/D	R	Q	1	9.6	G	M	2/Var.	0-400/0-1100	Y	N	N	N	2¾	N/A	N/A
	2416K	D/D	R	Q	1	9.6	G ⅝	M	2	400/1100	N	N	N	Y	2½	T	225
Makita	6012HDW	D/D	R	Q	1	9.6	G	M	2	400/1100	Y	Y	N	Y	3½	J	228
	6071DWK	D/D	R	Q	1	7.2	G	E	Var.	0-600	N	N	N	Y	2½	J	198
	6093DW	D/D	R	Q	1	9.6	G	M/E	2/Var.	0-400/0-1100	Y	Y	N	Y	3¾	U	254
Metabo	0096	D/D	R	Q	1	9.6	G/H	E	2/Var.	0-350/0-850	N	N	Y	N	4¼	WG	275
	D80/2 VSR	D/D	B	Q	1	7.2	G/H	E	2	250/700	Y	N	N	N	4	WG	284
	D100/2	D/D	R	Q	1	9.6	G/H	E	2	300/850	Y	N	N	N	4¼	WG	273
Milwaukee	0384-1	D	R	Q	1	7.2	G	E	Var.	0-600	N	N	N	N	2½	U	159
	0394-1	D/D	R	Q	½	9.6	G	E	2/Var.	0-350/0-1000	Y	N	N	N	3¼	U	249
	0399-1	D/D	R	Q	½	12	G	E	2/Var.	0-350/0-1000	Y	N	N	Y	3¾	U	284
Panasonic	EY571B	D/D	R	Q	1	9.6	G	M/E	2/Var.	50-350/150-1000	Y	Y	Y	N	3¾	J	179
Porter-Cable	9850	D/D	R	Q	1	12	G	E	Var.	0-400	Y	Y	N	Y	4	U	240
Ryobi	BD101AR	D	B	S	3	7.2	G	-	1	600	N	N	N	N	2½[7]	J	95
	BD1020CVR[8]	D/D	R	Q	1	7.2	G	M/E	2/Var.	0-300/0-600	Y	Y	Y	N	5[7]	J	181
	BD1025CVR	D/D	R	Q	1	9.6	G	M/E	2/Var.	0-350/0-1100	Y	Y	Y	N	6[7]	J	227
Sears	11127	D	R	S	3	7.2	G	E	2	300/600	N	N	N	N	4	U	64
	11128	D/D	R	Q	1	7.2	G	E	Var.	0-600	Y	N	N	N	6½	U	74
	11132	D/D	R	Q	1	9.6	G	E	Var.	0-600	Y	N	N	N	7¼	U	98
Skil	2535:02	D/D	R	Q	1	7.2	G	E	Var.	0-600	Y	N	N	Y	3¼	U	152
	2735:04	D/D	R	Q	1	12	G	M/E	2/Var.	0-500/0-1650	Y	N	N	Y	4	U	231
	2503:02	D/D	R	Q	1	7.2	G	E	2	300/600	Y	N	N	Y	3½	U	98
Stanley	75-051	D/D	R	S	3-12	6	G	-	1	400	N	Y	N	N	2¼	HK	60
Wen	38	D/D	B	S	3	N/A	G	M	2	230/500	N	N	N	N	1¾	N/A	N/A

1. (D) Drill; (D/D) Driver Drill;
2. (B) Built-in; (R) Removable
3. (Q) Quick; (S) Slow. Charger included unless otherwise indicated.
4. (G) ⅜" Geared; (H) Hex Shank
5. Includes bubble level in tool housing.
6. (HK) Hong Kong; (J) Japan; (T) Taiwan; (U) USA; (WG) West Germany
7. Includes weight of charger
8. Available as 2-speed model ($159).

KEEPING YOUR BATTERY AT ITS BEST

Most two-speed tools, even the clutchless ones, have mechanical gear-reduction systems like the one illustrated on page 43. A few manufacturers take another approach—altering speed by controlling current to the motor, either with a rheostat or electronically.

Faced with this choice, we prefer electronic control over the rheostat for two reasons: (1) constant rpm as load increases until motor and power capacity are reached; and (2) less stress on the battery.

The microprocessor built into electronically controlled drills automatically monitors the rpm of the tool and increases power to the motor to keep rpm constant. This also increases torque as required. The low-end gear range of 0–250 rpm operates slowly enough that you can use it as a driver/drill with less chance of damaging the work or the tool.

CHARGE!

Here's what to remember when it comes to getting the most from your drill/driver's battery pack.

Using your tool in extreme heat or cold won't harm your power pack, but let the battery cool or warm to the mid-70s before charging it.

It's wise to run a new tool down completely *once* before you charge it up to full power, but no permanent damage will result if you don't. Your new tool will achieve full capacity after several cycles.

Watch for voltage depression in trickle-charge tools plugged in for months at a time with little or no use. If the tool quickly loses power during use, just discharge and recycle until the tool regains full power (after one or two cycles).

Makita, above, and Black & Decker offer universal chargers that juice up any tool in each company's line.

Skil's model 2735:04 comes with an extra battery that can be charged and ready to replace the other as needed.

ALTERNATIVES TO A DRILL/DRIVER

The chart on the opposite page compares only drill/drivers and a handful of drive-only machines. However, several companies now offer cordless hammer drills worth considering for some applications.

These perform as ordinary drills. Or you can switch them to add very fast, short forward and back strokes to the rotary motion—making short work of drilling holes in concrete, brick, and tile.

At 27,750 blows per minute, cordless hammer drills like this Metabo quickly drill holes in concrete and masonry.

JUST IN CASE

If you expect to be carrying your drill/driver system from one site to another, or simply want to keep all of its components in one easy-to-find place, consider buying a model that includes a carrying case. These typically have compartments for the drill/driver, its charger, and a battery pack or two. Some also include storage for bits. ■

Some Black & Decker models come with a carrying case, as do units from Bosch, Hitachi, Jepson, Makita, Porter-Cable, and Skil.

DRILL PRESSES

SHOULD YOU BUY A FLOOR OR BENCHTOP PRESS?

Print this article

Before you set out to purchase a drill press, you first need to decide whether a benchtop or floor model makes better sense for your shop and budget.

Benchtop presses like the Jet and AMT models shown *at right* continue to be popular in small workshops where space dictates limitations. Benchtop models have less table travel—the maximum distance the table lowers from the bottom of the chuck—but most woodworkers rarely move their drill press table lower than 7" or 8" anyway. We put a new drill press in our shop four years ago and still haven't cranked the table lower than 8".

On the negative side, benchtop units do eat up precious work space.

If you have the floor space and can spend $40 to $100 more, consider opting for a floor model like the trio shown *opposite.*

Benchtop presses: Jet JDP-17M, left, and AMT 4590, right.

HOW THEY WORK

Benchtop or floor standing, all drill presses include the elements shown in the anatomy drawing *opposite.* A ***head*** mounts atop a cylindrical steel ***column*** at the rear of the machine. The head contains a ***motor, step pulleys*** that regulate speed, and a ***spindle*** that carries a ***drill chuck*** at its lower end. Pulling a ***quill feed*** lowers the bit into the work.

You can also tilt, raise, or lower the drill press ***table*** to accommodate

WHAT ABOUT SPINDLES AND SPEED?

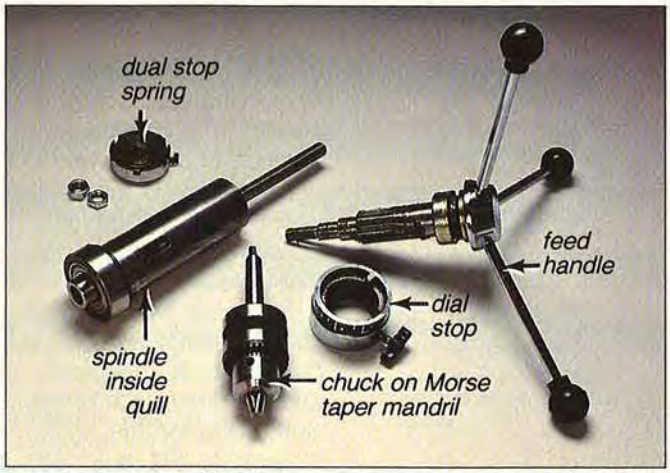
The spindle assembly, shown dismantled *at right,* is the heart of a drill press.

The spindle fits inside the quill, which has bearings top and bottom. A toothed rack on the quill and a pinion in the head move the quill and spindle up or down when you turn the feed handle.

CONTROLLING SPEED

We tested presses with up to 16 speeds ranging from about 150 spindle rpm to 4,700 rpm. We've found that if there's any drill-press hazard, it's that too many operators run their press bits at too high a speed. Once the bit turns blue, you've destroyed the steel's temper.

Flip open the top of a drill press and you'll



Spindle assemblies consist of a quill, dial-stop mechanism, feed handle, and chuck. Chuck sizes range from 3/8" to 5/8".

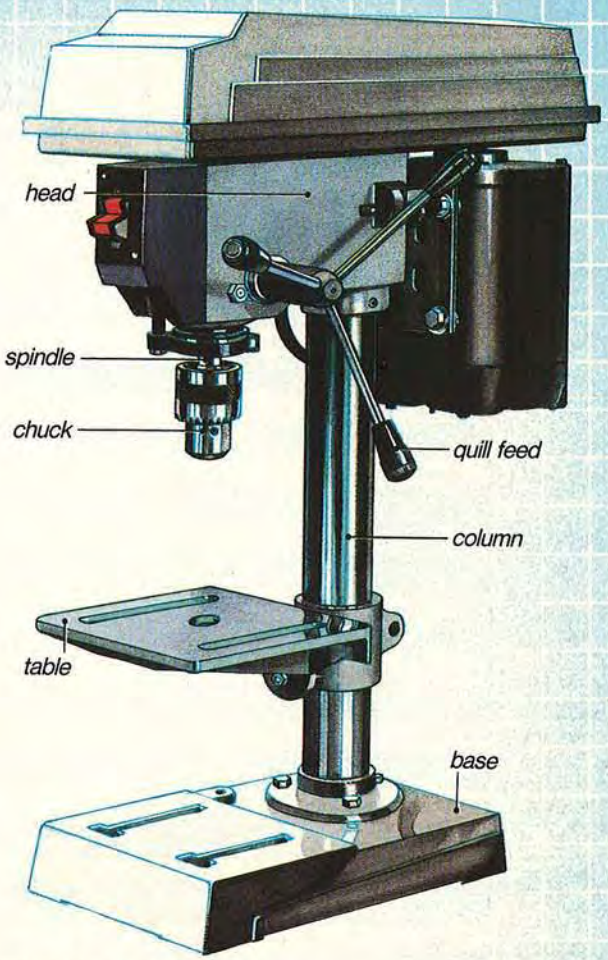
Drilling holes to a precise depth, by the hundreds if a project calls for them, is a drill press' forte. It also excels at drum-sanding, mortising, and countersinking.

Floor standers: Grizzly G-1200, left, Grizzly G-1201, center, and Sears 21315, right.

different sizes of stock and for drilling angled holes.

The base remains fixed and has holes so you can bolt it to a bench or screw it to the floor.

When you need maximum space below the chuck, swing the worktable out of the way and support stock on the base. To rig a benchtop press for a long boring job, swivel the head around and support stock on the floor.



ANATOMY OF A DRILL PRESS

see three step pulleys connected by two V-belts, as shown *at right.* On the inside of the lid or on the head, a chart tells how to set up the belts to attain each speed.

Don't succumb to the temptation to run the machine on the last belt arrangement you used. Check the bit manufacturer's speed recommendations for the material you'll be drilling. Exceed these and you could wreck an expensive bit. *(continued)*

Inside the head, most drill presses look like the Black & Decker pictured here. Combinations of belt arrangements set different speeds. A chart explains how to rig the belts for the various speeds you want. While testing a number of drill presses, we detected differences in performance between ½- and ¾-horsepower motors when running larger bits and circle cutters.

PRESSING MATTERS: 32 MACHINES

MANUFACTURER/ IMPORTER	MODEL NUMBER	SPEEDS (RPM)			SPINDLE			MOTOR			TABLE									
		NUMBER	LOW	HIGH	QUILL TRAVEL	DEPTH STOP[1]	CHUCK CAPACITY	AMPS	RPM	LOCKING SYSTEM[6]	SWING	TILT	RACK AND PINION	TABLE TRAVEL[4]	WORK LIGHT	HEIGHT	WEIGHT	COUNTRY OF ORIGIN[9]	SUGGESTED PRICE
BENCHTOP MODELS																			
AMT	4591	12	250	3100	3¼	D	⅝	10/5	1725	S	12½	Y	Y	8	Y	32	102	T	198
Black & Decker	9400	5	620	3100	2	TR	½	2.5	1720	S	8¾	Y	N	7	N	23¾	48	T	237
Bridgewood	BW-1412[10]	5	460	2420	3⅜	D	½	N/A	N/A	N/A	14	Y	Y	N/A	Y	40	140	T	199
Delta	11-090[2]	5	620	3100	3⅝	D	½	N/A	1725	S	32	[2]	Y	10¾	N	63¼	120	T	399
	11-950	5	620	3100	2	D	½	N/A	1720	S	8	Y	N	7	N	23¾	48½	T	160
	14-040	5	460	2500	3½	D	½	N/A	1720	S	14	Y	Y	22	N	39	145	T	390
	11-990	5	620	3100	2⅜	D	½	N/A	1720	S	12	Y	Y	11½	N	72	34	T	266
Grizzly	G1199	12	250	3100	3⅛	D	⅝	9/4.5	1720	S	14	Y	Y	17½	Y	40	150	T	210
Jet	JDP-14M	16	260	3650	3¼	D	⅝	8	1700	S	14	Y	Y	25	Y	66	212	T	339
	JDP-17M	16	200	3630	4⅜	TR	⅝	12	1700	S	16½	Y	Y	14¾	Y	42	179	T	399
Sears	21308	3	620	3100	2⅛	TR	½	N/A	1725	S	8	Y	N	5	N	23½	42	N/A	130
	21309	4	480	3000	2⅜	TR	½	N/A	1725	D	10	Y	Y	7¾	N	32	64	N/A	170
Total Shop	80B	12	250	3100	3½	D	½	12	1725	D	13	Y	Y	24	N	38	116	N/A	179
Value Craft	8050	5	620	3100	2	TR	½	5.9	1720	S	8	Y	N	7	N	23	49	T	150
	8075	12	250	3100	3⅜	D	⅝	9	1720	S	14	Y	N	14	N	39	146	T	270
FLOOR MODELS																			
AMT	4561	12	250	3100	3¼	D	⅝	10/5	1725	S	12½	Y	Y	25¾	Y	64	125	T	245
Bridgewood	BW-1758F	12	250	3000	3⅜	D	⅝	N/A	1720	N/A	16½	Y	Y	N/A	Y	66	180	T	339
Delta	17-900	12	250	3000	3½	D	½	N/A	1720	S	16½	Y	Y	27	N	66	194	T	503
	70-200	9	150	2200	4¾	D	½	N/A	1720	S	20	Y	Y	24½	N	67	345	T	932
DeWalt	1785	12	250	3000	3 11/32	TR	⅝	12	1720	S	16½	Y	Y	29	N	65	195	T	469
Foley-Belsaw	4140917[7]	12	N/A	N/A	3¼	D	⅝	12/6	1720	N/A	N/A	Y	Y	31	Y	63	223	T	359
General	34-01	6	460	4910	4½	TR	½	8.8/4.4	1725	D	15	Y	[3]	39½	[3]	66½	185	C	787
Grizzly	G1200	12	250	3100	3⅛	D	⅝	9/4.5	1720	D	14	Y	Y	26	Y	66	200	T	255
	G1201	9	150	2470	5	D	⅝	12/6	1720	D	18	Y	Y	21¼	Y	68	330	T	425
Jet	JDP-17MF	16	200	3630	4⅜	TR	⅝	12	1700	S	16½	Y	Y	29⅛	Y	66	216	T	459
Powermatic	1150-A[8]	Var.	475	4800	6	TR	½	10.6	1725	S	15	Y	N	41½	N	66	300	U	1508
Sears	21313	5	500	3100	3¼	D	½	N/A	1725	S	13	Y	Y	26½	N	66½	131	N/A	240
	21315	12	250	3100	3¼	D	⅝	N/A	1725	D	15	Y	Y	24½	Y	66	132	N/A	300
Total Shop	80F	16	460	3630	3½	D	⅝	12	1725	D	13	Y	Y	26½	N	66	148	N/A	239
	27FT	12	150	4200	4¾	D	⅝	12	1725	D	21	Y	Y	29	N	69	358	N/A	N/A
Value Craft	8100	16	195	3630	3⅜	D	⅝	10	1720	S	14	Y	Y	22	N	64	170	T	320
	8110	9	150	2220	3⅜	D	⅝	12	1720	S	17¾	Y	Y	22	N	66	260	T	530

1. (D) Dial; (TR) Threaded Rod
2. Head tilts, swivels and moves in and out. Table doesn't tilt.
3. Optional
4. Maximum distance table lowers from bottom of chuck.
5. Includes stand, but no motor.
6. (S) Single Knob; (D) Dual Knobs
7. Similar 17" model available
8. Available in step-pulley model
9. (C) Canada; (T) Taiwan; (U) USA
10. Six other models available.

DOES THE QUILL TRAVEL TRUE?

The 5⅛" quill travel on the Grizzly G-1201 outdistanced all the others we tested. By adjusting an allen bolt, top center, you can eliminate spindle play.

Quill travel determines the depth of a hole you can drill without changing the table elevation. Most of the models we tested have a 3¼" to 3½" quill travel. A few exceptions have even longer reaches.

A drill press should be free of eccentric drilling action, known as "runout." Because three-jaw chucks don't necessarily clamp the bit exactly on center each time, we reinstalled the bit at least twice more to check for runout. All the presses passed this test with no signs of appreciable runout.

But these were new machines. Will runout develop in a few years? We can't say, but we can tell you the Delta's radial drill *(opposite, below)* has thrust bearings that are durable—and expensive.

A SWINGING MACHINE

There's nothing like Delta's radial press on the market for under $5,000. Woodworkers especially like its 32" "swing"—the maximum diameter you can drill to the center of. This is created by sliding out the head.

This year, Delta shifted the manufacturing of this unit, and changed its design—both to the benefit of the home woodworker. For example, the machine now includes a motor and lists for $399—down from $539 for a unit without a motor. Delta also beefed up the columns and table by adding more metal to these components, upped the speeds from four to five, and changed the depth stop from a threaded rod to a dial.

With Delta's radial press, above, you tilt the head, not the table. When working with long stock, this simplifies drilling holes at an angle.

FINAL OBSERVATIONS

Most of the machines have plastic locking knobs, right, bottom, to tighten depth stops and belts. The flipper lever used on some Sears and Black & Decker machines, right, top, should give more service.

Unlike manufacturers of other floor models, Sears places its tilting guide conveniently near the handle used to raise and lower the table.

We'd like to see better depth stop knobs and belt-tension lock handles. The locking bolts with plastic knobs work fine until the plastic breaks off; then only a carriage bolt remains.

Most of the engineers curiously position the ON/OFF switch on the side of the drill press. Sears, Delta, DeWalt, and Jet put their switch in front where you can get to it quickly. Sears and Delta also incorporate a plastic safety key to prevent curious hands from turning on the machine.

Only the Sears table has the tilting scale on the same side as the tightening handle. We like threaded-rod depth stops, even though they take longer to set than dial stops. Jet just switched to threaded-rod stops.

And finally, the bottom line: cost. In our tests, the lower-priced machines held their own against machines that list for twice as much. Think long and hard before you spend $400 on a drill press that performs like a $200 model.

But don't overlook quality and a dealer network. The first place a company cuts costs is in the service department. Then, to reduce prices even further, a company can specify lower-quality motors and chucks. ■

BANDSAWS

From scrollwork to resawing timbers, bandsaws cut faster and deeper than any other

HOW MUCH SAW DO YOU NEED?

Print this article

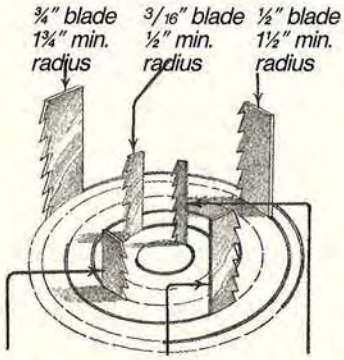
The answer to this question depends almost entirely on what kind of work you want to do with the saw. Any machine will cut an occasional curve in a piece of 1" stock, for example. But what if you want to cut thick carving blocks, large panels, or intricate curves, or resaw wide boards or perform any number of other tasks? Then, a bandsaw's *throat capacity, cutting depth,* and *blade-size adaptability* become important considerations in your choice.

Throat capacity: The widest cut you can make on a bandsaw—its throat capacity—equals the distance between the blade and the rear frame of the saw. If you anticipate working with large sheet materials, then you should opt for a machine with a large throat capacity.

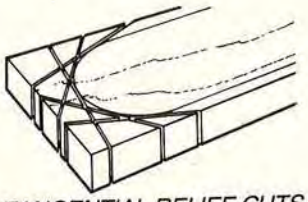
Cutting depth: The saw's cutting depth, measured from the table to the upper guide assembly (at its highest position), determines the maximum thickness of wood you can cut.

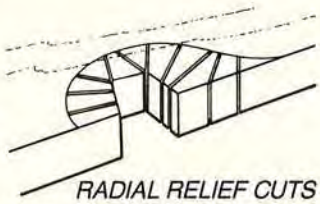
Cutting heights range from 3" or 4" on the smallest models to more than 7½" on the largest ones. The Delta, AMT, and Jet 14" two-wheel saws have optional riser blocks that can extend the cutting height to about 12".

Blade-size adaptability: Simply put, saws that accept a wide range of blade sizes can make a broad range of cuts, more accurately, than models that take only a few. Most bandsaws handle blades from ⅛" to ¾" wide—sufficient for most of the cutting jobs you'd normally do on a bandsaw. For the most accurate cuts, always use the widest possible blade you can for the radius of the curve you'll be cutting. The drawing *above left* shows the minimum radius of the curves you can cut with various-size blades. For tighter curves, make a series of *radial* and *tangential relief cuts,* as depicted *above right.*



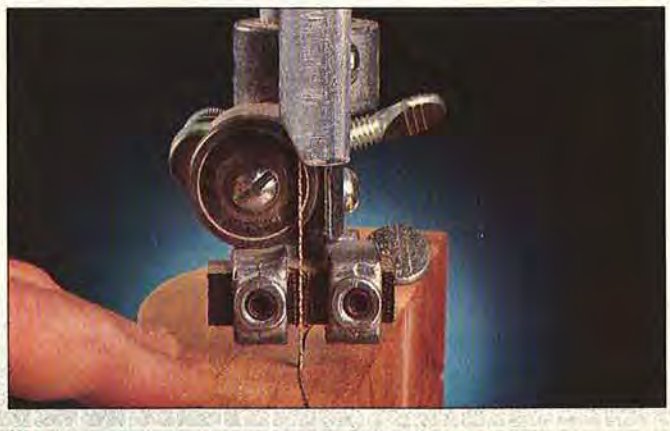
BLADE SIZE GUIDE


TANGENTIAL RELIEF CUTS

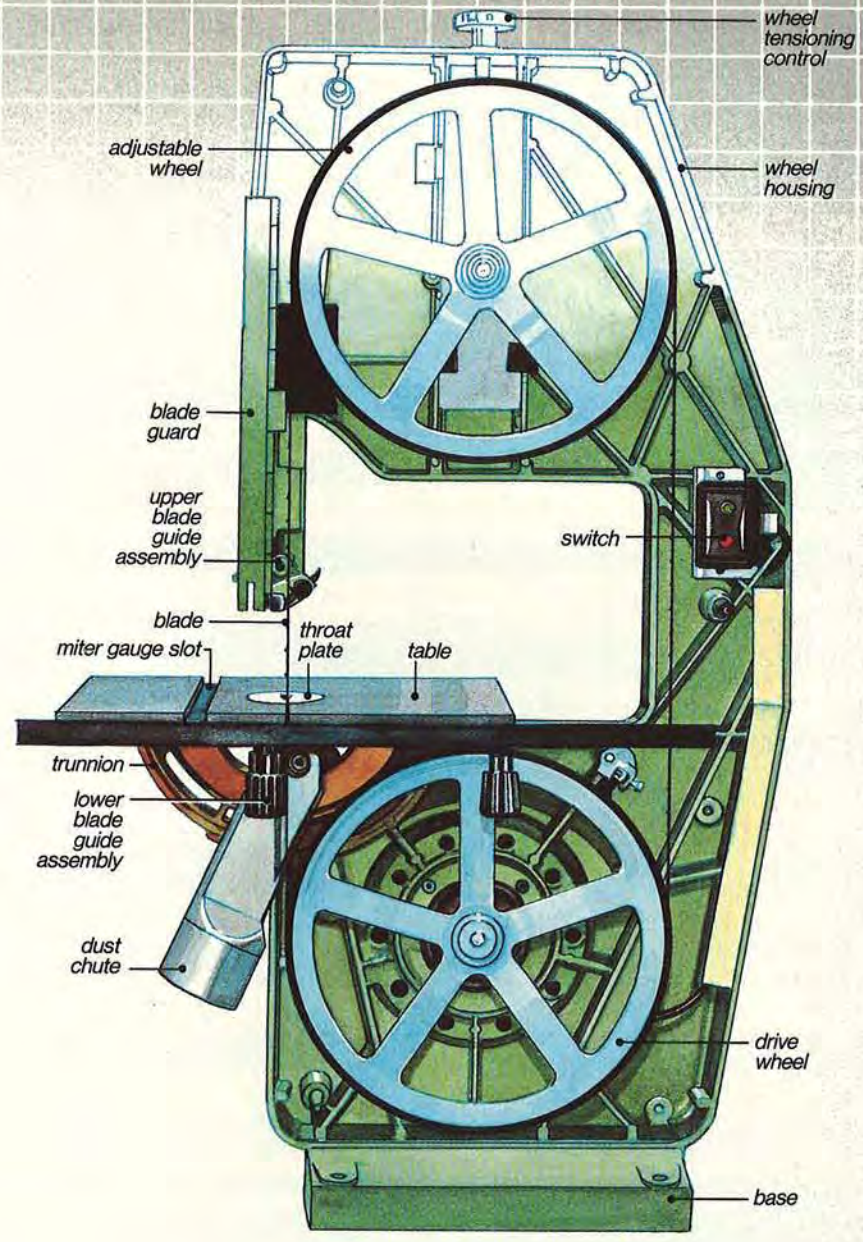

RADIAL RELIEF CUTS

HOW WELL DO THE BLADE GUIDES WORK?

Blade guides above and beneath the table brace and stabilize the flexible blade. Each adjustable assembly has a guide block on either side of the blade to prevent sideways movement, and a ball-bearing roller guide behind the blade to prevent backward movement as you feed stock. You raise or lower the upper guide to accommodate the stock's thickness.


Blade-guide assemblies should be easy to adjust. With some you must remove the throat plate to get at the lower guide assembly.

shop tool. Here's how to choose one that will do what you want it to.



ANATOMY OF A BANDSAW

All bandsaws—whether two- or three-wheeled—work in much the same way. A long, flexible, welded-steel ***blade*** travels on ***wheels*** supported by a rigid frame. Most two-wheel saws have separate ***wheel housings*** with removable covers so you can change blades. Most three-wheelers, and a few two-wheelers, such as the Inca illustrated *at right,* have a one-piece housing.

Here a motor at the rear turns the ***drive wheel*** directly off the motor's shaft (direct drive); other saws use a belt-and-pulley system (belt drive).

Adjusting the upper wheel controls blade tension and tracking. The ***tensioning control*** raises and lowers the wheel; the tracking adjustment tilts it slightly, canting the blade into or out of the cut. For an inside look at a three-wheel saw, see page 53.

SPECIAL-PURPOSE SAWS

The Inca *(near right, top)* has an optional blade-guide assembly that takes a 1/16" blade. It can do the work of a scroll saw, except inside cuts, in stock up to 6" thick.

If you plan to do resawing, you may want a bandsaw that takes blades 1½" or wider, such as the Ryobi BS-50N *(far right)*. The Ryobi is actually a resawing machine designed to take wide bandsaw blades.

(continued)

***Near right, top:** Inca solved the problem of fitting a 1/16"-wide blade in a bandsaw. A special grooved roller guide replaces the standard roller bearing.*
***Near right, bottom:** Micro-adjustments on Delta's 14" saw provide precision control on roller guides and guide-assembly carriage.*

***Above:** The Ryobi BS-50N comes equipped with a 2"-wide blade to accurately resaw boards up to 7" wide.*

26 CURVACEOUS CUTTERS

MANUFACTURER/ IMPORTER	MODEL NUMBER	(B)ENCH OR (S)TATIONARY	THROAT CAPACITY	CUTTING HEIGHT	BLADE WIDTHS	NUMBER	WHEELS MATERIAL[1]	WHEELS BEARINGS[2]	WHEELS SIZE	TABLE TILT	TABLE MATERIAL[1]	POWER TRAIN VOLTS	POWER TRAIN AMPS	POWER TRAIN DRIVE[3]	POWER TRAIN BLADE SPEED[4]	FRAME MATERIAL[1]	HEIGHT[5]	WIDTH	DEPTH	BLADE TENSION INDICATOR	ACCESS.[6] STANDARD	ACCESS.[6] OPTIONAL	WEIGHT	COUNTRY OF ORIGIN[7]	SUGGESTED PRICE
AMT[8]	4113	S	13¾	6	⅛-¾	2	CA	B	14x14	45°R	CI	110	[10]	BP	3000	CI	66	22	25	N	S	R,M,E,MR	163	T	299
Black&Decker	9422	B	7½	3¾	⅛-¼	2	P	B	10x10	45°R	AA	120	3.3	BP	650	P	N/A	N/A	N/A	Y	M,MR	-	26	U	174
Bridgewood	BW-14BS	S	14	6	⅛-¾	2	CA	B	14x14	N/A	CI	110	N/A	BP	3000	CI	65	28	26	N	MR,M,S	R	189	T	299
Delta	28-560	S	16	8	⅛-⅜	3	CA	B	16x16	45°R 3°L	CI	110	N/A	BP	450,2400	CI	60⅝	31	21	Y	R,MR,M,S	L,SA	156	T	560
	28-160	B	10	4	⅛-⅜	3	P	B/N	11½x11½	45°R	CA	115	N/A	D	2700	CA	22 7/16	12 13/16	23¼	N	MR,M,R	L	40	T	210
	28-245	S	14	6¼	⅛-¾	2	CA	B	14x14	45°R, 10°L	CI	115	N/A	BP	3000	CI	65½	25	17½	Y	MR,S	R,M	201	U	741
	28-283	S	14	6¼	⅛-¾	2	CA	B	14x14	45°R, 10°L	CI	115/230	N/A	BP	3000	CI	65½	25	17½	Y	MR,S	R,M	229	U	919
Foley-Belsaw	4820901	S	14	6	⅛-¾	2	CI	B	14¼x14¼	45°R 10°L	CI	110	11.5	BP	700,1230, 2420	CI	65½	20	25	N	MR,M,S	RK	218	T	449
General	490-1	S	15	6¾	¼-¾	2	CI	B	15x15	45°R 10°L	S	110/220	8.8/ 4.4	BP	3000	CI	66½	18	26¾	Y	S	R,MR,M,L	295	C	857[8]
Grizzly	G1019	S	14	6	¼-¾	2	CA	B	14½x14¼	45°R 10°L	CI	110/220	12/6	BP	2500	CI	66	27	23	N	MR,M,S	MBS	200	T	325
	G1538	S	15⅞	10½	¼-1	2	CA	B	16x16	45°R 5°L	CI	110/220	16/8	BP	1130.1699, 2859	CI	65½	32	20	N/A	R,MR,M,S	MBS	280	T	525
Inca	340	B	10½	6¼	1/16-½	2	CA	N[13]	12½x12½	45°R	AA	110	8.8	D	3281	CA	35	23	18	Y	R,MR	M,E,S,SA,CC	55	S	795
Jet	JBS-14CS	S	13½	6	⅛-¾	2	CA	B	14x14	45°R 10°L	CI	115	16	BP	3000	CI	65½	24½	19¼	N	MR,M	R,RK	198	T	579
	JBS-14OS	S	13½	6	⅛-¾	2	CA	B	14x14	45°R, 10°L	CI	115	14	BP	3000	CI	65½	24	23	N	MR,M	R,RK	180	T	489
Kity	613	S	12	8	⅛-1	2	CA	B	20x20	45°R	AA	110	10	BP	3780	S	65	30	24	N	R,MR	M,S,E	143	F	795
Lobo	BS-0163	S	16	11½	⅛-1	2	CA	B	16x16	45°R 10°L	CI	110/220	8/16	BP	N/A	CI	66	22	30	N	MR,MS	R.E	270	T	549
Mini-Max	Pro-32	B	12½	6½	3/16-¾	2	CI	B	15x15	45°R	CI	110	N/A	D	3000	S	39	22¾	21	Y	R,MR,S	M	202	I	885
Powermatic	141	S	14	6½	⅛-¾	2	CI	B	15x15	45°R 15°L	CI	115	10.6	BP	3000	CI	71¾	25½	13¼	Y	MR,S	R,M,CC	225	U	1468
Sears	24851	S	12	6	1/16-½	2	CA	B	23x27	45°L	CA	120	N/A	BP	1500,3000	CA	N/A	N/A	N/A	Y	MR,S	R,M,CC	149	U	450
Shopsmith	505641	S	11	6	1/16-⅝	2	CA	B/N	11¾x12	45°R 5°L	CI	110	8.8	BP	2218,3312	CA	30⅜	20½	11¾	Y	MR,S	M,B,S	45	U	399[9]
Skil	3104	B	10	4	⅛-½	3	P	S	14x13	45°R	CA	110	4.2	D	500-2000	S	24¼	24¼	15	N	R,MR,M	SA	32	U	216
Total Shop	919	S	14	5½	⅛-¾	2	CA	B	14x14	Y	CI	110	14	BP	N/A	CI	69	32	21	N	MR,M,S	-	156	N/A	279
	958	S	16	10	3/16-1	2	CA	B	16x16	Y	CI	110/220	14/7	BP	420/680	CI	66	29	24	N	R,MR,M,S	R	295	N/A	510
Trans-Power	SB500	S	14	6	⅛-½	2	CA	B	14x14	N/A	CI	110	12	BP	N/A	S	65	N/A	N/A	N	MR,M,S	-	176	T	285
Value Craft	8155A	S	14	6¼	⅛-½	2	CA	B	14x14	45°R, 10°L	CI	115/230	12/6	BP	2760	CI	65	24	16	Y	MR,M,S	-	172	T	460
Vega	400	S	13⅞	8	¼-¾	2	CA	B	14x14	45°R 10°L	S	110/220	12/6	BP	2000,3000	S	72½	25	28	Y	MR,S	R,M	250	U	995

1. (CI) Cast Iron; (CA) Cast Aluminum; (P) Plastic
2. (B) Ball; (N) Needle
3. (D) Direct Drive; (BP) Belt and Pulley
4. Surface Feet Per Minute
5. Includes height of stand on stationary saws
6. (R) Rip Fence; (MR) Motor; (M) Miter Gauge; (E) End Extension; (S) Stand; (SA) Sanding Attachment; (CC) Circle Cutting Attachment; (L) Light; (RK) Riser Kit
7. (C) Canada; (F) France; (I) Italy; (S) Switzerland; (T) Taiwan; (U) USA
8. Canadian currency
9. Does not include power stand ($199).
10. Motor not included.

DOES THE TABLE TILT SMOOTHLY?

When you tilt the table, check for smooth operation and make sure the locking knobs on the trunnions hold the table firmly at any angle without having to apply too much pressure. Also check that the throat plate fits snugly and sits flush with the table surface. You don't want the work snagging on it while sawing or having the blade cut into it. We prefer a plastic throat plate to metal ones because it's less likely to damage blades should they accidentally hit it.

Bandsaw tables are small—typically 12" to 14" square. For most work, you won't need a table much larger than this. If you do, some manufacturers offer table extensions.

***Right:** Sturdy trunnions provide solid support for the heavy cast-iron table on the Grizzly 18" saw. Tilting this table is easier than you might think.*

***Right:** A small table extension attaches to the front or either side of the AMT 14" saw's table. This saw also has an optional riser block to extend its cutting height to 12".*

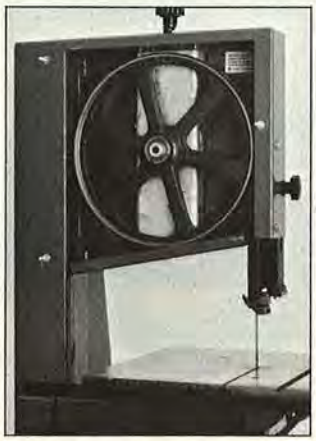
WHAT TO LOOK FOR IN A GOOD SAW

Evaluate a bandsaw as you would any other machine: First check out its components, then put the saw through its paces to see how well they all work together. Here are the important items to check out.

MOTORS

All stationary saws and most benchtop units use induction motors. Some smaller benchtop saws have universal motors. Its our belief that the small size, high rpm, and limited brush life of universal motors make them more suitable for portable power tools than for big machines.

On the saws we looked at, motors ranged from ½ to 2 hp.



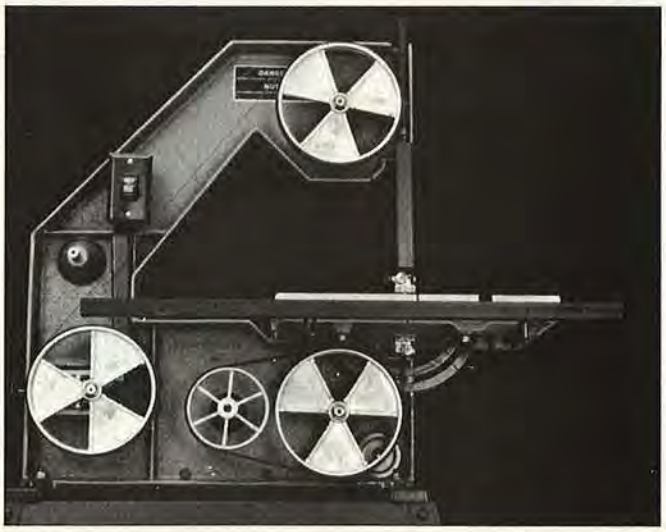
Mini-Max precision-balances its cast-iron bandsaw wheels by drilling holes in the rims.

WHEELS

Most bandsaws feature cast-iron or cast-aluminum wheels; some benchtop models have plastic ones. The heavier cast-iron wheels develop more momentum than either the plastic or aluminum wheels. This helps keep the blade from bogging down when cutting. Saws with heavy, well-balanced wheels also run more smoothly, and with less noise and vibration.

WHICH SAW IS RIGHT FOR YOU?

Delta's 16" bandsaw is a typical three-wheeler. The third wheel allows for a greater throat depth. With this saw, to lower the blade speed for cutting ferrous metals, you remove the pulley and run a smaller drive belt directly off the motor arbor.



Whether you should select a two- or three-wheel saw depends on the tradeoff you want to make—more throat capacity or longer blade life. The three-wheel design offers a greater throat capacity in relationship to the overall size and weight of the saw. However, three-wheelers have a reputation for breaking blades more frequently. Also, you'll find that three-wheel bandsaws usually take longer to adjust to get the blade tracking correctly. ■

THICKNESS PLANERS

DO YOU REALLY NEED A PLANER?

Print this article

If you've always thought you could get along fine without a thickness planer, this report just may change your mind.

Sure, you can use a jointer to plane, but a planer gives a more uniform surface, especially on long stock. Also, a planer self-feeds, which means less work. And finally, jointers for the home shop handle stock only up to 6 inches wide, compared with 10 inches and more for planers.

Best of all, prices for these powerhouses have dropped lately, thanks to a new generation of 12" machines from Taiwan.

HOW PLANERS WORK

Peek inside Ryobi's portable AP-10, *opposite,* and you can see how a planer sizes and smooths stock to your specs. A ***bed*** supports the work. ***Infeed*** and ***outfeed rollers*** pull it through the machine as a ***cutter head*** planes the board with two or more knives.

A planer's motor powers both rollers and the cutter head, but at different speeds and in opposite directions: The rollers turn slowly clockwise; the cutter head rotates counterclockwise at a much higher speed.

To operate a planer, you first adjust the height as the wood moves across the bed; other machines require a good bed waxing now and then.

Feed rollers are made of either steel or molded rubber. Which is better? Opinions vary widely. Serrated steel infeed rollers grip the wood firmly and feed it through with little slippage, as long as you cut deep enough to eliminate the indentations. You can usually count on steel rollers to last the life of the machine with no maintenance other than cleaning.

SOME PLANE TRUTHS

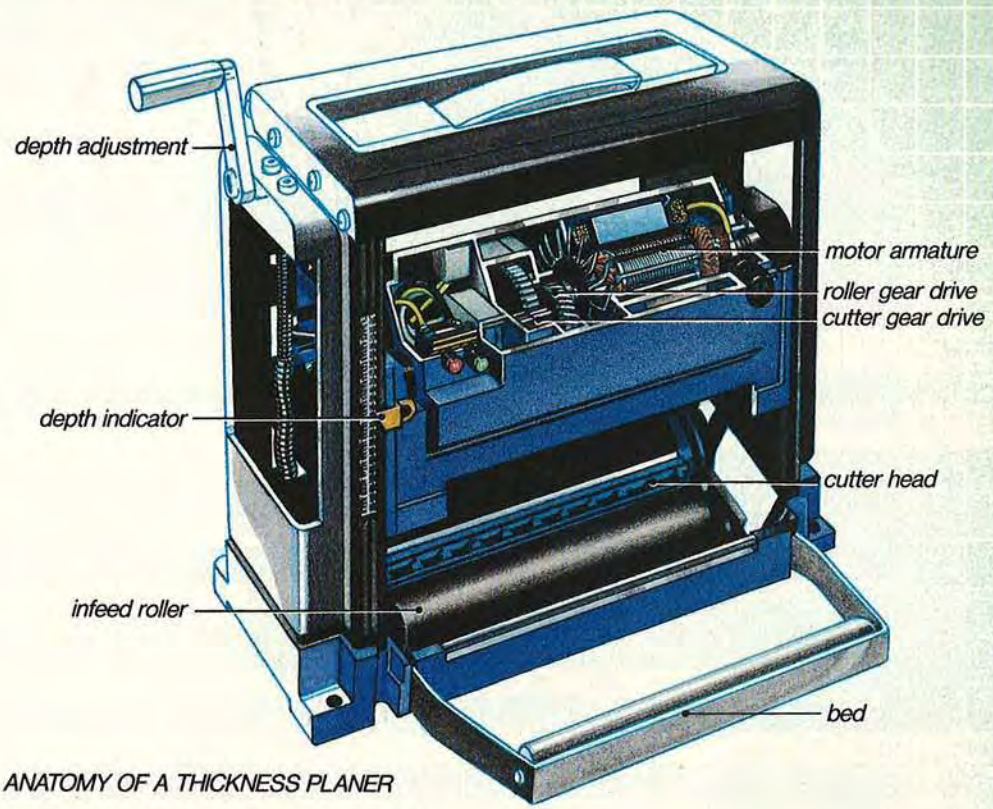
The key elements of a planer are its feed system and cutter head. Power-feed systems consist of infeed and outfeed rollers. Some machines also have idler bed rollers mounted in slots in the bed beneath the upper powered rollers. The idlers reduce friction

***From left to right:** Shopsmith 555082, Grizzly G1021, and Ryobi AP-10.*

Why settle for run-of-the-mill lumber? With a thickness planer you can mill stock to the exact dimensions your woodworking project calls for.

of the cutter head and rollers for the thickness you want. Then you turn on the machine, place a board on the entry side of the bed, and push it forward into the infeed roller. The machine takes over from there, moving stock past the cutter head and spewing out wood chips like cornflakes. All you have to do now is wait for a smooth-surfaced board to emerge on the outfeed table.

Don't expect a thickness planer to cure warping or twisting. Downward pressure from the rollers temporarily flattens boards, but they distort again when pressure is released.



ANATOMY OF A THICKNESS PLANER

Rubber rollers, on the other hand, leave no nicks or cuts. And because they leave no grip marks, rubber rollers allow you to simply "skim" a surface. Although we don't consider it a major problem, rubber rollers do tend to wear faster and slip more easily. A new roller costs about $10 and takes only 10 minutes to change on most machines.

OUTFEED ROLLERS

When it comes to outfeed rollers, the choices are smooth steel, steel with very fine serrations or knurls, or rubber. Some machines, such as the Williams & Hussey and Shopsmith models, use rubber outfeeds with steel infeed rollers to avoid marring.

No matter what type of rollers you choose, keep them clean and the table waxed. Denatured alcohol does not damage rubber rollers and leaves no residue as it dissolves built-up wood pitch—the biggest cause of roller slippage and bed sticking.

(continued)

Delta's DC-33 pioneered commercial-quality construction at moderate cost. Its cast-iron head/power drive assembly rides on tubular steel columns.

Foley-Belsaw's 12" Model 985 features a sheet-steel frame and cast-iron bed. Sears thickness planers have the same specs as Foley-Belsaw.

IN THE THICK OF IT: 29 PLANERS

MANUFACTURER/ IMPORTER	MODEL NUMBER	AMPS	POWER TRAIN						CUTTER HEAD					FEED SYSTEM						ACCESS.[4]		MATER.[5]					COUNTRY OF ORIGIN[6]	SUGGESTED PRICE
			VOLTS	MOTOR TYPE[1]	POWER DRIVE[2]	NO. OF SPEEDS	HEAD SPEED (RPM)	FEED RATE (FEET PER MINUTE)	CUTS PER INCH	NO. OF KNIVES	GIB TYPE[3]	(J)ACKS OR (S)PRINGS	INFEED (R)UBBER/(S)TEEL	OUTFEED (R)UBBER/(S)TEEL	MAXIMUM CUT	THICKNESS CAPACITY (WxH)	MOLDING	JOINTER CAPACITY (W)	STANDARD	OPTIONAL	FRAME	THICKNESS BED	JOINTER BED	BASE	WEIGHT		
Bridgewood	BW-12P	16	120	U	G,C	1	8000	26	51	2	W	N/A	R	R	1/16	12x6	N	-	B,C	A,D	A,S	A	-	A	67	T	389
	BW-15P	17	220	I	G,B,C	2	4500	16/20	70/56	3	W	N/A	S	S	3/16	15x6	N	-	A,B,C	D	T4	I	-	I	450	T	829
Delta	22-661[7] DC-33	N/A	230	I	G,B,C	1	6100	18½	82	3	W	J/S	S	R	⅛	13x 5.9	N	N	B,C	A,D,I	I	-	-	I	285	B	1586
Foley-Belsaw	985	23	220	I	B,C	2	4500	12/20	94/56	3	W	J	R	R	3/16	12⅜x6¼	Y	N	A,B	C,D, G,H	S	I	-	S	382	U	1399
Grizzly	G1021	10	220	I	G,B,C	1	5000	16/20	104/ 83	3	W	S	S	S	⅛	15x6	N	N	B,C,D,G	A,I	T4	I	-	I	500	T	735
	G1033	18	220	I	G,B,C	2	5000	16/20	104/ 83	4	W	S	S	S	¼	20x8	N	N	A,B,C, D,G	I	I	I	-	S	900	T	1295
	G1017	16	110	U	G,B,C	1	8000	26	51	2	W	J	R	R	⅛	5½x12	N	N	B,C		S	S		A	80	T	375
Jet	JWP-15H	17	230	I	G,B,C	2	4500	16/20	70/56	3	N/A	S	S	S	⅛	15x6	N	N	A,B,G	-	T4	-	-	T	476	N/A	1322
Makita	2012	12	115	U	B,C	1	8000	26.2	50.9	2	N/A	N/A	R	R	3/32	12x6	N	N	B,C	A,I	A	A	-	SS2	53	J	895
RBI	612TH	17	208	I	B	2	4200	11/33	96/32	3	P	J	R	R	¼	12⅜x6½	Y	N	A,B,G	C,D,E,H	S	I	-	S	280	U	1299
	720TH	22	208	I	B	V	4800	5/20	55/ 1000	3	P	J	R	R	¼	20½x7	Y	N	A,B,G	C,D,H	S	S	-	S	486	U	N/A
Ryobi	AP10	13	120	U	G,B,C	1	8000	26	51	2	B	-	R	R	⅛	10x5	N	N	B,C,I	A,G,I	S	A[9]	-	A	58	J	749
Sears	23381	12.6	120	U	G,C	1	6500	20	58	2	B	S	R	R	⅛	12[10]	Y	N	A	B,E	S	CI	-	S	76	U	359
Shopsmith	555082	15	120	I	B	Var.	5750	7-20	72-205	3	W	J	S	R	⅛	12x4	N	N	A,B,C	D,I	A	I	-	S	151	U	999
Total Shop	980	14	110	U	B	1	8000	26	N/A	2	W	N/A	R	R	⅛	12x6	N	N	B,C	A	S	A	-	A	69	N/A	395
	903	18/9	110/220	I	B	1	4300	16½	68	3	W	N/A	S	S	⅛	15x6	N	N	B,C	A,D	CI	I	-	CI	397	N/A	895
Transpower	AP850	18	220	I	B	2	5100	16/20	N/A	3	N/A	S	S	R	3/16	15¼x8	N	N	A,B,C, D,G	-	I	CI	-	S	600	T	754
	AP150	16	110	U	B	1	8000	26	N/A	2	N/A	S	R	R	⅛	12½x6	N	N	B,G	A,D	S	A	-	A	65	T	338
Value Craft	8315	14	115	U	G	1	8000	26	N/A	2	N/A	N/A	R	R	⅛	12x6	N	N	C,D	S,I	S	A	-	A	69	T	600
Williams & Hussey	W7S	15	110/220	U	G,B,C	1	7000	15	78	2	B	-	R[11]	R	¼	7x8¼	Y	N	-	A,B,D,I	T2	I	-	I	85	U	898
Woodmaster	718	22	220	I	B	Var.	0-4200	0-16	70-1000	3	P	S	R	R	3/16	18½x6¾	Y	N	A,B,C,G	D,H	S	I	-	S	420	U	N/A
	712	22	220	I	B	Var.	0-4200	0-16	70-1000	3	P	N/A	R	R	3/16	12¼x6¾	Y	N	A,B,C,G	D,E,H	S	I	-	S	300	U	N/A
THICKNESS PLANER/JOINTER COMBINATION MACHINES																												
Elecktra-Beckum	HC260 ESH	13	220	I	G,B,C	1	7200	19	63	2	P	J	S	S	⅛	10¼x6⅜	N	10¼	A,B,E	F	A[9]	A	A	S	125	WG	1250
	HC260 M	20	110	I	G,B,C	1	6000	16	63	2	P	J	S	S	⅛	10¼x6⅜	N	10¼	A,B,E	F	A[9]	A	A	S	124	WG	1295
	HC260 K	16	220	I	G,B,C	1	10200	27	63	2	P	J	S	S	⅛	10¼x6⅜	N	10¼	A,B,E	F	A[9]	A	A	S	190	WG	1375
Inca	550[8]	20/ 10.7	115/230	I	C	2	6000	11½/16½	87/61	2	W	N/A	S	S	⅛	10½x6¼	N	10½	B,E	A,C,D	A	A,S	A	W	150	S	1895
Kity	638	12	220	I	B,C	1	7020	29	60	3	W	S	S	S	3/16	12⅛x9	N	12⅛	A,B,D,E	C,F	S	CI	A	S	166	F	2895
	637	10	220	I	B,C	1	8400	25	56	2	W	S	S	S	⅛	10¼x6	N	10¼	A,B,D,E	C	S	S	A	S	166	F	1895
Mini-Max	PFS 260	N/A	115	U	B	1	5700	23	41	N/A	W	N/A	S	S	⅛	10x7¾	N	10	A,B,C,E	F	S	S	S	S	240	I	1250

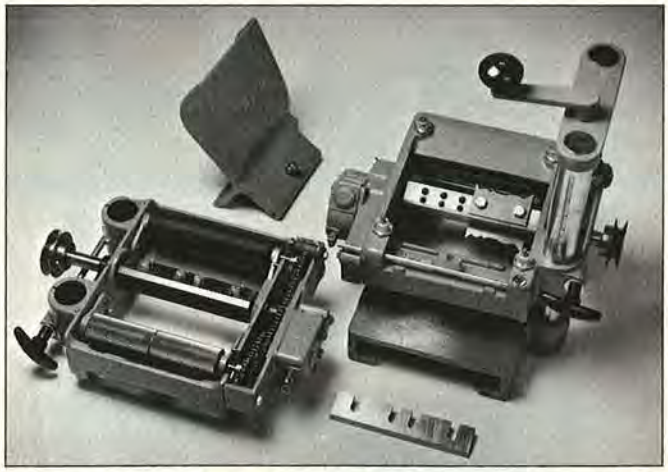
1. (U) Universal; (I) Induction
2. (G) Gear; (B) Belt; (C) Chain
3. (W) Wedge; (P) Pinch; (B) Bolt-Through
4. (A) Stand; (B) Motor; (C) Knife-Setting Gauge; (D) Dust-Collection Hose; (E) Jointer System; (F) Mortising System; (G) Extension Table/Rollers; (H) Surface Sanding; (I) Dust Hood
5. (S) Sheet Steel; (A) Cast Aluminum Alloy; (I) Cast Iron; (SS2) Solid Steel—2 post; (T2) Tubular Steel—2 post; (T4) Tubular Steel—4 post; (W) Wood
6. (B) Brazil; (C) Canada; (F) France; (I) Italy; (J) Japan; (T) Taiwan; (U) USA; (WG) West Germany
7. Model 22-655 uses 3HP, 3-phase motor wired for 220V ($1,640).
8. Model 570 has 3 knives ($2,195).
9. Laminated with stainless steel sheet
10. Open throat allows 6" knives to plane 12" board in two cuts
11. Steel optional.

HOW DOES THE CUTTER HEAD WORK?

Power planing with a rotary-knife head can never give the smooth results of a stationary blade pushed across the same surface—but hand-planing takes a lot of time and skill to surpass what a power planer can deliver in just seconds.

The revolving cutter head makes hundreds of short, slightly dished scoops in a board. The number of these cuts per inch and how accurately you set the blades determine how smooth the resulting surface will be.

Smaller planers have two- or three-knife cutter heads. Two-knife heads rotate at higher speeds than three-knife heads to achieve the same number of cuts per inch, which determines how many marks will remain.



Williams & Hussey's steel cutter head: The view from the bottom, left, shows serrated steel infeed rollers, rubber outfeed rollers.

LOOK WHAT ELSE A PLANER CAN DO

Some thickness planers do more than simply reduce lumber to size and leave it with a finished surface. A combination planer-jointer lets you salvage boards twisted into pretzels. With jointing capacity to match thicknessing capacity, you can eliminate cupping and twisting with one tool.

Or opt for a planer-molder. This machine lets you plane boards to exact dimensions and make moldings of almost any pattern. Powerful 3- to 5-hp. motors are standard with 12" versions. With this much power, even full-width cuts as deep as 5/16" won't cause stalling.

Planers can sand, too. RBI and Woodmaster machines offer interchangeable heads for molding and drum-sanding.

It takes just a few minutes to adjust the Woodmaster 712, upper right, for cutting moldings like these. With RBI and Woodmaster, however, separate heads for molding, lower right, mean you don't have to reset the planing knives.

DON'T GET LEFT IN THE DUST

All thickness planers, large and small, throw out lots of debris. A shop vacuum won't solve the problem because it fills quickly and clogs easily.

Permanent dust-control systems do a good job, but they're expensive —about $1,500 installed —and you have to rework ducts every time you move or add a machine.

A portable dust collector combines the best features of both. It has more suction and storage than a shop vacuum. And you can move it from machine to machine, regardless of their number or locations.

At $350 and up, we think a portable dust collector makes sense: It reduces the health risks of breathing all that stuff, and your shop and home will stay much cleaner. ■

The right size dust collector will bag 95% of the stuff. Here we ran our 12" Foley-Belsaw planer without a collector, above, left, then hooked up Inca's 690-cubic-foot-per-minute collector, above.

SCROLLSAWS

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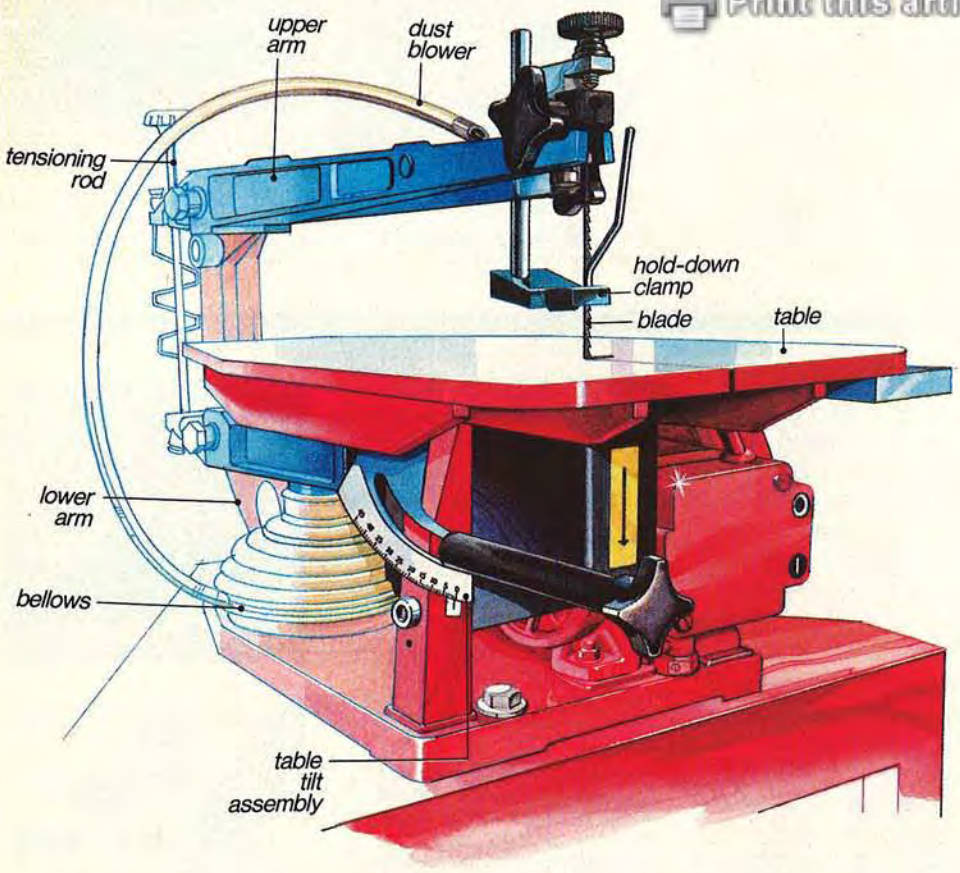


WHICH ARM STYLE SHOULD YOU EMBRACE?

Today's scrollsaws have come a long way from the old-fashioned, rigid-arm "jigsaws" of just a decade ago. Rigid-arm machines (illustrated *opposite*) cut with a push/pull stroke that flexes, fatigues, and often breaks the flimsy blade.

Constant-tension scroll saws, like the Hegner depicted *at left,* are a big improvement. With these, a pair of pivoting arms hold the blade at a constant tension (about a "middle C" when plucked). The arms alternately pull the blade

WHAT HOLDS THE BLADE?

You'll change blades lots of times over the life of a scrollsaw, so when you're shopping for one, check out its blade-clamping system.

In most of the current breed of scrollers, the blade attaches to the moving arms with pivoting blade clamps. These clamps either are pinned to the ends of the arms, or are separate, being attached to each end of the blade and resting in grooves in the arms.

The AMT model 4601 has a pin-type blade holder, but you can install a pivoting blade clamping device that holds standard blades and comes with every unit.

When using a clamp-type holder such as this one, make sure you leave a 1/16" gap between the locking screw and clamp to prevent breaking an excessive number of blades.

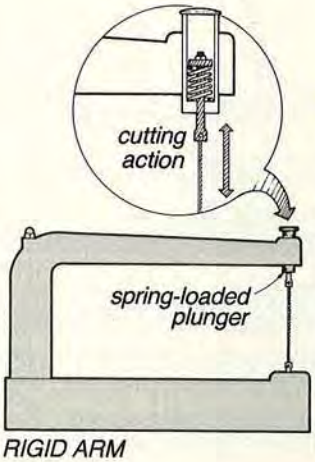
The big news is that now you can buy decent 15″ scrollers for under $170. More money will buy still more precision, greater capacity, and variable speed control.

back and forth through the workpiece. This pull/pull action results in faster, smoother, and more accurate cuts. This action also results in far fewer broken blades.

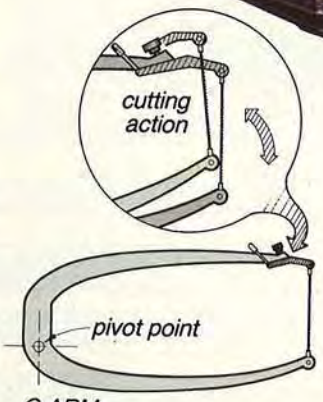
ARM STYLES

On old-time *rigid arm* saws, the blade attaches to a drive piston under the table; the upper end attaches to a second piston tensioned with a spring. As the drive piston pulls the blade down in the cutting stroke, the spring compresses then jerks the blade back up through the work.

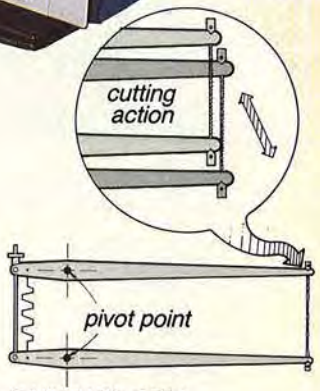
Constant-tension scrollsaws have ***C-arms, parallel arms,*** or a combination of both. Through an offset cam linkage between the motor and lower arm, these pull the blade in a rocking motion that eliminates almost all the teeth marks that rigid-arm saws and bandsaws leave behind.



RIGID ARM



C-ARM



PARALLEL ARM

WHAT CAN A SCROLLSAW DO FOR YOU?

For any kind of toy, puzzle, jewelry, or inside or outside fretwork, no tool can outdo the scrollsaw. It's much safer than any other power saw, and you can spin corners as tight as the blade's width.

Sure, a bandsaw is great for scrolling wider turns. And a hand-held jigsaw can make cuts in panels much too large for either type of stationary scrolling machine. But only the scrollsaw gives you the intricate detailing and pattern-cutting capability made possible by the fine blades this saw drives.

Of course, you can cut faster on a bandsaw than on a scroller. But the sanding time to eliminate teeth marks outweighs the cutting time lost on a scrollsaw.

Excalibur: wrench and pin.

Sears: two-clamp holders.

Hegner: blade-clamp holder.

Pivoting-blade clamps rock in their "cradles," giving the blade an even curve that reduces the stress on the fine steel shaft. Two benefits accrue: One, the blades break less often and, two, you can force the saw to cut faster with less blade damage. Blades cost only about 17 cents each, but the time lost changing them is annoying.

With pin-type blade clamps some makers furnish a locking pin that holds the swinging clamp stationary while you change blades. Without this, the clamp twists up against the arm as you torque the locking screw.

In machines that have removable blade clamps, you must hold the clamps in a vise or some other holder while you turn the lock screw. Hegner and RBI incorporate a simple, timesaving blade-clamp holding device in the table.

Sears and Dremel go one step further by building holders for both ends of the blade clamps into the casting. This lets you position the blade with the same distance between the clamps each time. *(continued)*

WHEN PUSH COMES TO PULL: 35 SCROLLSAWS

MANUFACTURER/ IMPORTER	MODEL NUMBER	ARM STYLE[1]	THROAT DEPTH	STROKE LENGTH	STROKES PER MINUTE	MAX. CUT DEPTH	TABLE SIZE	TABLE BEVEL	BLADE LOCK STYLE[2]	MOTOR				BEAR.[6]		ACCESS.[7]			COUNTRY OF ORIGIN[8]	SUGGESTED PRICE
										SPEED CONTROL[3]	DRIVE SYSTEM[4]	TYPE[5]	AMPS	ARM PIVOTS	TIE ROD TO MOTOR	STANDARD	OPTIONAL	WEIGHT		
AMT	4391	P	15	¾	1725	2	7x18	45°L	S	N	D	I	1.8	S	B	N/A	N/A	44	T	89
	4601	P	16	¾	1725	2	8x14¼	45°L	S,F	N	D	I	1.8	S	B	B,S	-	47	T	169[10]
Bridgewood	SS-15	P	15	¾	1725	2	7⅞x17	45°R	S	N	D	I/T	1.6	S	B	-	S	38	T	99
Delta	40-601	C	18	⅞	40-2000	2	16 dia.	45°R,30°L	S	E	D	U	1.7	B	B/R	B,S	L	132 w/st.	N/A	1025
	40-150	C	15	⅞	1725	2	7⅞x17	45°L	S	N	D	I	1.6	S	B	-	F,S,M	37	T	198
	40-560	C	16	⅞	850-1790	2	11¾ dia.	45°L	S	E	D	I	N/A	S	B	B	F,S,M	46	T	267
Dremel	1371	C	13	5/16	1790	2	10 dia.	45°L	S	N	D	I	.9	S	B	-	-	23	T	139
	1695	P	16	¾	200-2000	2	12 dia.	45°L	S	E	D	PM	1.7	S	B	B	S	40	T	299
	1671	P	16	¾	890/1790	2	12 dia.	45°L	S	E	D	I	1.6	S	B	B	S	43	T	199
Excalibur	24-SS[11]	P	24	¾	500/1000/1725	2¼	14x24	20°R,45°L	A	B	B	I/T	4.4	B	B	B,S	-	110	C	1235
	11-SS[11]	P	19	¾	400/800/1400	1¾	12x17¼	45°R,45°L	F	B	B	I/T	4.4	B	B	B	L	70	C	679
Foley-Belsaw	435	SR	20	½	600/2000	2	12x12	45°R,45°L	F	E	D	U	2.0	S	B	L,B[9]	S	143 w/st.	U	419
Grizzly	G1572	P	15	¾	1725	2	8x17	45°L	F	N	D	I/T	1.4	S	B	-	-	44	T	100
Hegner	Multi-Max 14S[11]	P	14⅜	11/16 or 7/16	1660	2	9x17	45°L	S	N	D	I/T	1.9	S	B	B,S	L	28	WG	599
	Multi-Max 25S[11]	P	25	11/16 or 7/16	1660	2	10x20½	45°L	S	N	D	I/T	1.9	S	B	B	L,S	66	WG	1499
	Polymax	P	19⅝	15/16 or 7/16	700/1100/ 1270/1600	2	10x19	45°L	S	B	B	I/T	3.6	S	B	B	L,S	85	WG	1899
	Multi-Max 18S[11]	P	18	13/16 or 7/16	1660	2⅝	17x9	15°R,45°L	S	N	D	I/T	1.9	S	B	B	L,S	41	WG	749
Jet	SS-24	SR	24	1¾	790/990/ 1250/1600	1¾	15½x15½	45°R,15°L	A	B	B	I/T	10	-	[14]	B,S	-	180	T	967
Lobo	JS-0022	P	22	1	1750	2	9x17	45°R	S	N	D	I	N/A	B	B	B	S	68	T	225
Mini-Max	TF51	SR	20	⅞	150/1500	3⅛	15¾x13	45°R,45°L	F	E	D	U	2.4	N/A	N/A	B[9]	S	99	I	699
Penn State	Super15	P	15	¾	1650	2	8x17	45°L	S	N	D	I/T	1.4	S	B	-	B,S	43	T	120
Powermatic	95	SR	24	1	807-1653	1¾	14x15	45°R,15°L	F	B	B	I/T	6.4/3.2	B	B	B,S	-	199	U	1560
	93	P	15	¾	1725	2	7 1/16x14⅜	45°L	S	N	D	I/T	1.6	S	B	-	-	37	T	1456
RBI	Hawk 214	P	14	13/16	1725	2	10½ dia.	45°R,45°L	SA	N	D	I/T	1.8	S	B	S	L,B	67	U	649
	Hawk 220-3	P	20	1⅛	375/750/1400	2⅛	14 dia	45°R,45°L	SA	B	B	I/T	1.8	B	B	B,S	L	87	U	949
	Hawk 226M	P	26	1¼	450-1450	2	14 dia.	45°R,45°L	SA	B	B	I/T	5.75	B	B	B,S	L	138	U	1499
	Hawk 216-3	P	16	⅞	375/750/1550	2	10½ dia.	45°R,45°L	SA	B	B	I/T	1.8	S	B	B,S	L	69	U	749
Sakura	SKS-21	P	21	1	170/450/ 790/1140/1370	2	14x22½	45°L, 35°R	S	B	D	I/T	2.2	S	B	B,S	L	85 w/st.	T	699
	ST-14-3	P	14	1	1050/1361/1750	2	9x14½	35°R,45°L	S	B	D	I/T	1.8	S	B	B,S	L	65 w/st.	T	499
Sears	2076C[15]	WB	18	⅞	1600	2	9x14⅜	[12]	S	N	D	I	2.0	B	B	-	S	26	U	230
	23611C	WB	16	¾	1700	2	8x14	45°L	F	N	D	I	2.0	S	B	-	S	40	N/A	150
Shopsmith[13]	555272	P	20	13/32	500-1200	2	23⅞x16	45°R,45°L	S	E	B	DC	1.7	S	B	B,S	M	62	U	649
Total Shop	94720	P	20	1⅛	500/800	2	14 dia.	45°L, 42°R	SA	N	B	I	N/A	S	B	S	-	68	N/A	359
Value Craft	8350	P	15	¾	1725	2	17x7⅜	45°R	Conv.	N	D	I/T	1.6	B	B	B	S	42	T	160
	8355	P	16	¾	860/1725	2	14¾x7⅞	45°R	P	E	D	I/T	1.6	B	B	-	S	49	T	200

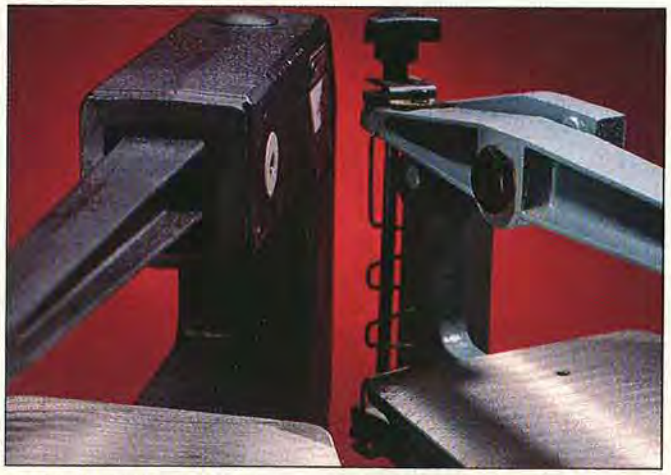
1. (P) Parallel; (C) C-Arm; (WB) Walking Beam; (SR) Spring Recoil
2. (S) Separate Pivoting Clamp; (A) Attached Pivoting Clamp; (F) Fixed Clamp; (SA) Bottom: Separate Pivoting Clamp, Top: Attached Pivoting Clamp
3. (E) Electronic; (B) Belt; (N) None
4. (D) Direct; (B) Belt
5. (I) Induction; (DC); (I/T) Induction, Totally Enclosed Fan Cooled; (U) Universal
6. (B) Ball; (S) Bronze Steel; (R) Roller
7. (L) Light; (B) Blower; (S) Stand
8. (C) Canada; (I) Italy; (T) Taiwan; (U) USA; (WG) West Germany
9. Blade guard not included
10. Purchaser entitled to $50 additional merchandise from catalog
11. Also available with variable-speed motor
12. Head tilts 45°R and 45°L
13. Similar model available for mounting on Mark V ($469)
14. Motor not included
15. Catalog only

EVALUATING CONSTRUCTION QUALITY

Most of the inexpensive scrollsaws we tested were made in the same Rexon plant in Taiwan, albeit to somewhat different specifications. We found that these machines had the lower-quality castings typical of Taiwanese machines, but this didn't affect cuts during our evaluations.

Competition from the new Taiwanese saws has prompted Hegner, makers of a finely machined German product, to reduce prices on its Multimax 2 by as much as $300, but it still costs about four times as much as the Taiwanese models.

Among the low-price machines, we especially liked the way AMT's model 4601, *near right,* supports the arm's sleeve bearing on both sides for greater stability.



The sleeve bearing holding the casting of the AMT 4601, left, supports the arm on both sides as shown.

The similar arm-support bearing on 15" models like the Delta, right, receives support on only one side.

DO YOU NEED VARIABLE SPEED CONTROL?

Some scrollsaws have variable electronic speed controls; with others you change pulleys to change the speed.

Electronic-dial variable speed lets you set an infinite number of speeds—especially helpful when cutting metals. Though not as handy or variable as a dial, belt-change speed control gives more power to the blade the slower it moves.

Low-priced Taiwanese saws operate at just one speed, excepting AMT and Dremel, which have two speeds. If you only use a scroll saw on a sporadic basis, these represent a good value. On the other hand, if you do a lot of scrollwork or intricate jobs involving metal materials or veneers, you'd be better off with a more-expensive variable-speed machine.

FOUR SCROLLERS FOR LESS THAN $170

We took a look at four scrollsaws, representing two types of inexpensive machines. From left, AMT's 15½" model 4601, and nearly identical 15" machines from Delta, Penn State, and Total Shop. The AMT cut as well as any fixed-speed scrollsaw we've used. The 15" models also work well, but with a little bit more vibration. Prices: about $130 for the 15"ers, $169 for the AMT.

All of the Taiwanese machines performed to our expectations. However, we appreciate the extra heft of the AMT model 4601; it weighs 6½ pounds more than the others.

For their low price, these saws also require you to make a couple of trade-offs. Changing blades is time-consuming. Additionally, all of the low-price scrollsaws have plastic guards, which prove to be more irritating than protective. ■

PLUNGE ROUTERS

SHOULD YOU TAKE THE PLUNGE?

Print this article

Versatile as they are, fixed-base routers have their limitations. Blind mortises and dadoes, cutouts, template routing, and freehand routing techniques such as inlay work and sign making aren't among their fortes. For inside cutting jobs like these, turn to a plunge router. Why? Because the entire motor-and-bit assembly slides up and down against spring tension on two posts attached to the base. To make the plunge, you set the base squarely on the stock, turn on the motor, release a lock, and push down on the handles, driving the bit arrow-straight into the wood. Then you lock the motor down against a preset depth stop, and make your cut.

When you're done routing, release the lock and retract the bit by easing up on the handles. Straight in, straight out—a much safer way to rout. Plunge routers do have a few drawbacks. One is higher cost. You'll usually get more horsepower for your money if you buy a fixed-base router. You also have a greater selection of sizes, prices, and optional features with the conventional tools.

Despite these few inconveniences, we consider plunge routers well worth the extra cost. And as a companion to a conventional router, plunge is definitely the way to go!

ANATOMY OF A ROUTER

To see what goes on inside a router, study our cutaway view *opposite*. This super-versatile tool consists of little more than a high-speed motor that spins clockwise on a vertical axis, direct-driving a ***collet*** that holds the cutting bit. Handles attached to the sides let you guide the machine through the work.

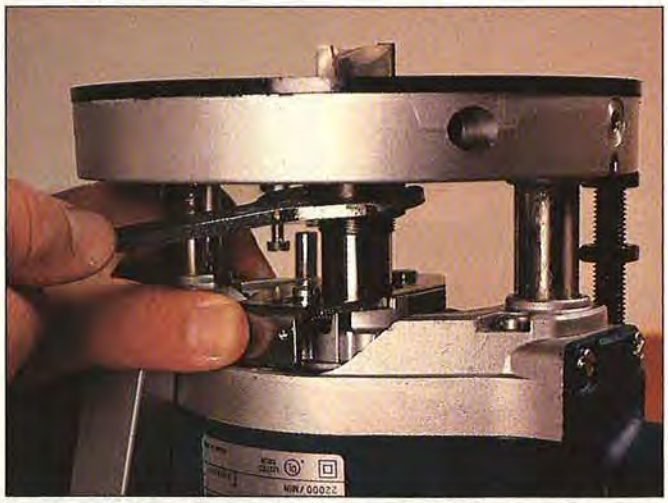
Or you can turn your router upside down, attach it to a router table, and feed the work through the spinning bit. A ***depth-adjustment*** mechanism slides the motor up and down through the ***base housing*** to vary the distance the bit projects from the router's ***sub-base.*** This determines how deep the bit will bite.

FIRST CHECK OUT THESE BASICS

Start with the collet. A ¼" collet will handle almost any routing job you'll encounter. For very heavy work, consider a tool with a collet big enough to take ½" bits. Just make sure it will take ¼" bits, as well. A few routers won't. Even more important than a collet's size is the procedure you need to go through in changing bits. Most routers require two wrenches for bit changes. One wrench holds the motor shaft; the other turns the collet nut. Other routers have built-in shaft locks so you need only one wrench. That's one fewer wrench to handle—or lose.

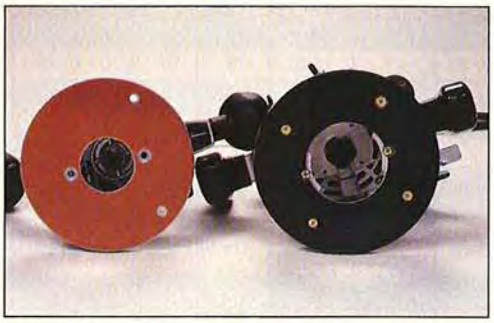
Now let's look at the four main types of switches.

A ***trigger*** switch has two main advantages: First, you can squeeze it while



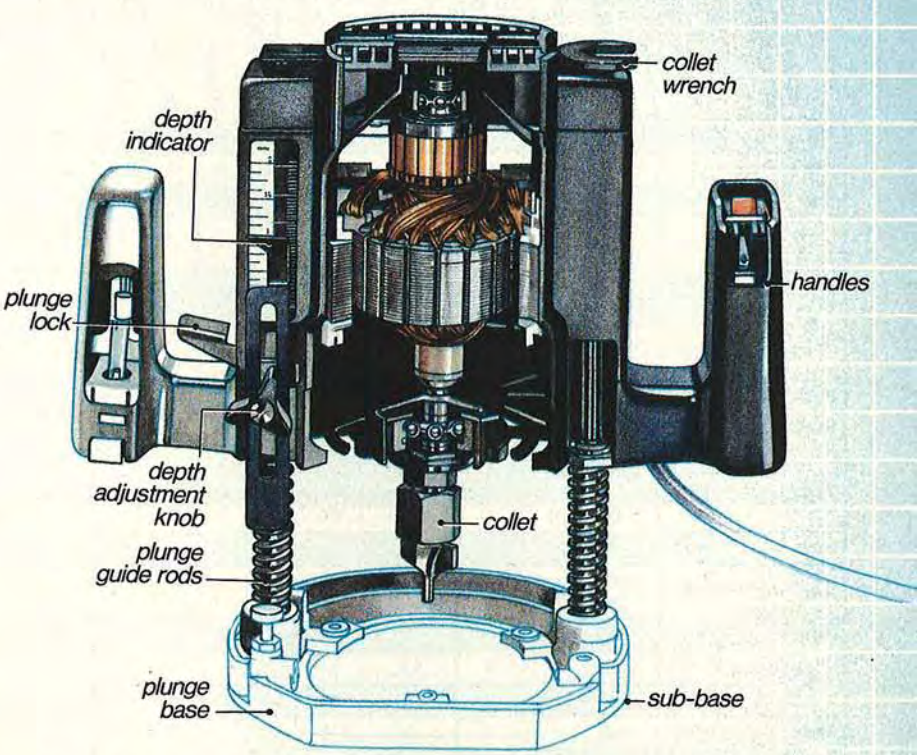
Bosch's 1611 plunge router has the kind of one-wrench bit-changing system we like. A thumblock holds the motor shaft.

If you own an ordinary router, you've probably noticed how tough it is to start and end cuts in the middle of stock. A plunge router dives right in!



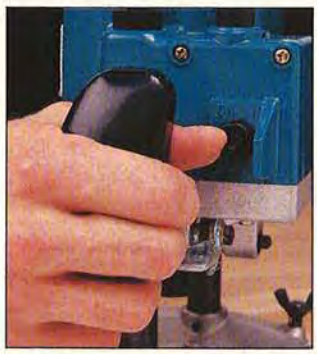
*A stick-on base shoe, **left,** is hard to peel off when scratched. We prefer the screw-on type, **right.***

A router table provides a partial alternative to a stationary shaper, at a much lower cost.

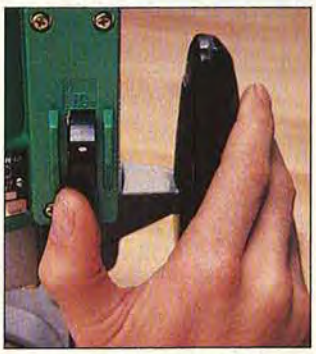


ANATOMY OF A PLUNGE ROUTER

You'll probably find a trigger best for conventional routing.



Toggles work well—if they're within reach of your thumb.



To reach this rocker switch you must relax your grip.

Slide switches can't be inadvertently tripped.

maintaining two-hand control of the tool; second, it shuts off automatically when you release it. On the minus side: You can accidentally squeeze the trigger when you pick up the tool.

Toggle, rocker, and *slide* switches can be almost as convenient as triggers, provided they're positioned where you can reach them while keeping both hands on the router grips. *(continued)*

IN THE GROOVE: 22 TWO-FISTED TOOLS

MANUFACTURER/ IMPORTER	MODEL NUMBER	MOTOR			COLLET CAPACITIES	MAX. PLUNGE DEPTH	DEPTH STOP POSITIONS	SWITCH TYPE[1]	PLUNGE LOCK TYPE[2]	HANDLE TYPE[7]	BASE			ACCESS.[6]		HEIGHT	WEIGHT (LBS.)	COUNTRY OF ORIGIN[8]	SUGGESTED PRICE
		NO-LOAD RPM	AMPS	ELECTRONIC VARIABLE SPEED							OUTSIDE DIAMETER[3]	HOLE DIAMETER[4]	SHOE TYPE[5]	STANDARD	OPTIONAL				
AEG	OFS50	25,000	6.25	N	¼	$1^{5}/_{16}$	3	TR	M	K	$6^{1}/_{8}$	1½	ST	A,E	B,I	$8^{1}/_{8}$	5½	WG	289
Black & Decker	7615	25,000	9	N	¼	2	N	TR	M	A	6	1¼	SC	-	A,C,D,	7¾	8¼	U	130
Bosch	1611	22,000	14	N	¼,⅜,½	3	8	TR	S	A	6¾	2⅝	SC	B	A,C,D,H,I,	12½	12	U	349
	1611EVS	12,000-18,000	15	Y	¼,⅜,½	3	8	TR	S	A	6¾	2⅝	SC	B	A,C,D,H,I	13¾	12¼	U	410
Elu	3304[11]	8,000-24,000	6.5	Y	¼	$1^{5}/_{16}$	3	S	T	K/A	$5^{11}/_{16}$	2½	ST	A,B	C,D	$9^{9}/_{16}$	6	S	278
	3338[11]	8,000-20,000	12	Y	¼,⅜,½	$2^{7}/_{16}$	3	S	M	A	$6^{11}/_{16}$	2⅝	SC	A,B	C,D,E,G,H,I	11¼	11¼	S	412
Freud	FT2000	22,000	15	N	¼,½	2⅝	3	S	S	A	6⅝	2½	SC	I	A,B,C	12¾	12½	SP	318
Hitachi	TR8	24,000	6.9	N	¼	2	3	R	M	N/A	5⅝	$1^{15}/_{16}$	SC	A,B,C,D	F	9	6.4	J	232
	TR12	22,000	12.2	N	¼,⅜,½	2¾	3	R	M	A	7	$1^{15}/_{16}$	SC	A,B,C,D, G,H,I	F	10⅝	11	J	354
	M12V	20,000	15	Y	¼,⅜,½	$2^{7}/_{16}$	3	S	M	A	$7^{3}/_{32}$	2	SC	A,B,C,I	H,D,E,F,G	$11^{13}/_{16}$	11.7	J	447
Jepson	7412	23,000	14.1	N	½	2½	3	R	M	K	$6^{9}/_{16}$	2¾	SC	-	A,B,C,D,E	$11^{5}/_{16}$	13	T	330
Kress	KR185	8,000-24,000	4.2	Y	¼,⅜	1¾	3	S	T	K	4½	1¾	ST	C,D,G,H	A,I	9½	2¾	WG	160
Makita	3620	24,000	7.8	N	¼	1⅜	3	TR	M	A	5⅝	2¾	SC	F	A,B,C,D	$8^{5}/_{16}$	5¾	J	192
	3612BR	23,000	14	N	¼,½	2½	3	T	M	A	6¼[9]	2¾	SC	I	A,B,C,D,G	$11^{5}/_{16}$	12½	J	350
	3606	30,000	7	N	¼	1¾	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7⅛	5½	J	160
Metabo	RT508	27,000	5	N	¼	1¾	1	S	T	K	5⅞	$1^{13}/_{16}$	ST	A	B,D	11¾	7¾	WG	250
Porter-Cable	693	23,000	10	N	¼,½	2½	6	T	S	K	5¾	$1^{3}/_{16}$	SC	I	A,C,D,E,F,H	10½	11½	U	280
	7538	21,000	15	N	½	3	6	TR	S	A	7	$1^{13}/_{16}$	SC	A,C,D,E,F,H,I		11¼	17¼	U	399
Ryobi	R-501	22,000	13.3	N	¼,⅜,½	2⅜	3	TR	M	A	6½	$1^{5}/_{16}$	SC	A,C,H,I,J	B,C,D,G	10¼	11	J	318
	RE-600	10,000-22,000	15	Y	¼,⅜,½	2½	3	T	M	A	6½	$1^{15}/_{16}$	SC	A,C,H,I,	B,C,D	12¼	13½	J	431
Skil	1835	25,000	9	N	¼	2	1	R	S	A	6	2¾	ST	B[10]	A,C,D, E,F,H	9¼	7	U	117
	1823	25,000	8.5	N	¼	2	1	R	S	A	6	2¾	ST	[10]	A,B,C,D, E,F,H	9¼	7	U	94

1. (T) Toggle; (R) Rocker; (S) Slide; (TR) Trigger
2. (M) Manual; (T) Twist Knob; (S) Self-Locking Lever
3. Maximum diameter on bases with one or more flat sides
4. Minimum diameter of base opening; determines maximum bit profile diameter.
5. (ST) Stick-On; (SC) Screw
6. (A) Edge Guide; (B) Template Guide Adapter; (C) Template Guide Bushing; (D) Assorted Bits; (E) Extra Base and Sub-Base (F) Carrying Case; (G) Trimmer Guide; (H) ⅜" Adapter Sleeves; (I) ¼" Adapter Sleeves
7. (A) Two Arms; (K) Two Knobs; (DK) D-Handle and Knob
8. (J) Japan; (S) Switzerland; (SP) Spain; (T) Taiwan; (U) USA; (WG) West Germany
9. Also available with square base
10. Wrench and bit storage on tool
11. Fixed speed version also available.

BOTTOMS UP?

All the depth-adjustment systems we tested work well with the router right side up. But if you are planning to use it upside down in a router table, you might prefer a rack-and-pinion system. With many of the other mechanisms, the router motor slips down as soon as you loosen the locking clamp; this makes setting depth a two-handed job.

HOW DOES THE PLUNGE LOCK WORK?

A manual locking lever requires the most effort to operate. Flip it down to lock, up to unlock. These can vibrate loose.

A twist knob (the right-hand handle) locks easily, but may loosen when you pick up the router.

A spring-actuated lever automatically locks when you release your thumb. We found this one the easiest to use.

When you're looking at a plunge router, the first thing you'll probably want to do is plunge it up and down a few times. Does the router have a smooth, stick-free plunging action? Also test for slop (side-to-side movement) between the posts and router body. To do this, have someone hold the base firmly against a flat surface while you rock the body by the handles.

Next, examine the levers or knobs that enable you to lock the router body in any position. Some routers have manual levers you push down with your thumb to lock, pull up with your index finger to unlock. If you don't lock these levers firmly, they may vibrate loose.

On other routers you lock the body by twisting a knob-type handle. These are convenient to use, but you could accidentally loosen the handle while picking up or using the router.

A third system uses a spring-loaded, self-locking lever. To unlock the lever you push down with your thumb; release the lever and it locks the router automatically in position. We favor this type.

CAN YOU VARY THE SPEED?

The big news with routers these days is electronic speed control. We like this feature a lot. Not only can you dial the speed you want, but the electronics circuitry maintains a constant speed under varying loads by monitoring the rpm and feeding voltage as needed. This means you're less likely to bog down the motor.

We consider variable speeds especially useful on the large routers. Here's why: Several manufacturers now sell large-profile router bits, such as 4" raised-panel cutters. These bits, because of their size, really aren't designed to cut at the 20,000–30,000 rpm speeds most routers run at. With a variable-speed router you can closely match the listed speed ratings—as slow as 8,000 rpm—for these large bits. This optimizes performance and safe operation. Electronic speed controls also come in handy when you want to make slow, finish cuts in hardwoods.

FIRST-EVER RETRO-FIT PLUNGE ROUTER

When Porter-Cable finally introduced a plunge router recently, it came in a form that really surprised us—the first and only plunge base that retrofits to routers with 3½"-diameter motors. "With all the moving parts in a plunge router, we wanted to make sure we could maintain very tight tolerances in its mechanisms before introducing a unit," said Dennis Huntsman of Porter-Cable.

Indeed, we found that the model 6931 base shown at *right* maintains tight tolerances (such as its concentric alignment of the bit within the base's guide bushing). And, it does so in a sturdy, easy-to-handle package. One advantage of such a base: You need to own only one motor for router table or hand-held plunging work.

Will this new base fit the router(s) you already own? It will if you have any of the following: Porter-Cable or Rockwell models 100, 150, 350, 630, 670, 690 and 691 (PC sells the base with the 690 motor in its model 693 plunge router); Bosch 1601, 1602, 1603, 1604, and 1606; as well as the Black & Decker 2720. The base itself lists for $120. ■

Porter-Cable's new plunge base retrofits to most 3½"-diameter motor housings.

JOINTERS

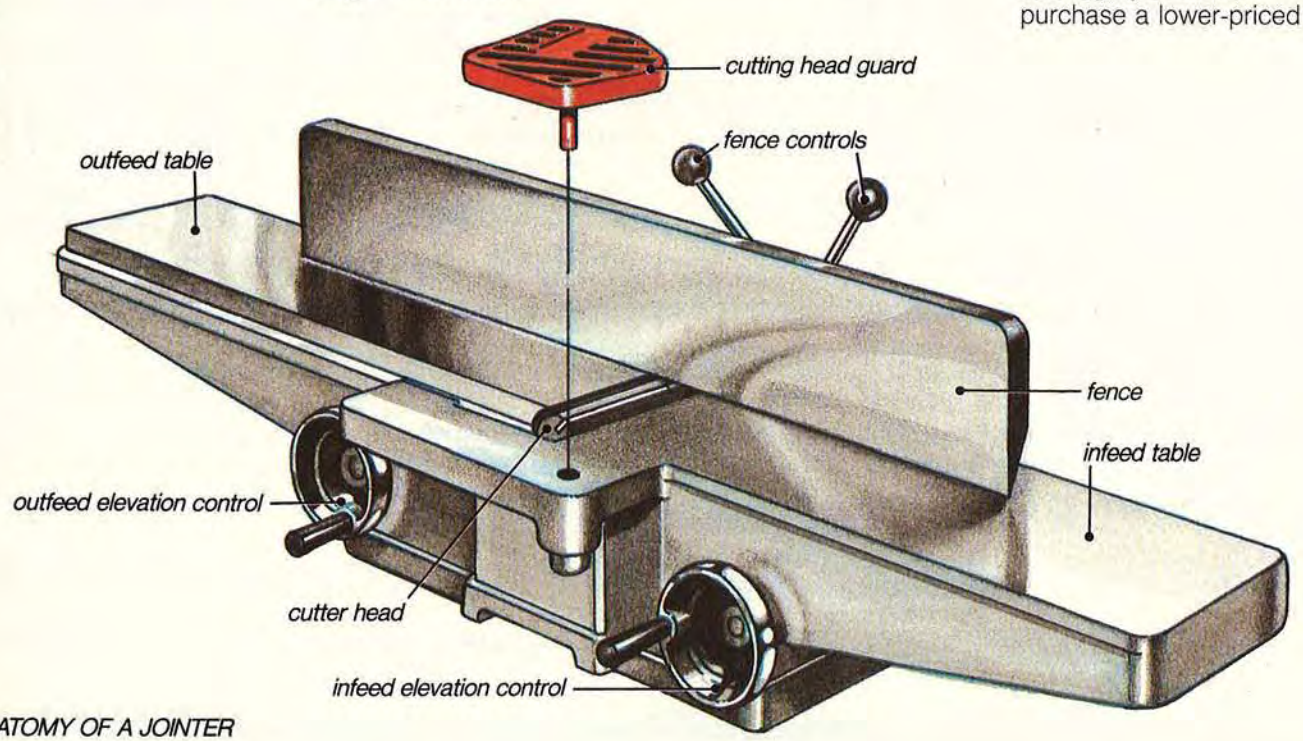
True edges, at precise angles, assure that always and accurately the twain shall meet.

WHAT CAN A JOINTER DO FOR YOU?

Print this article

Just as the tablesaw has replaced the handsaw for many woodworking tasks, so has the jointer sidelined the hand plane for many edge- and surface-preparation jobs. But, this versatile tool's usefulness doesn't stop there. You can also use it to cut tapered legs, chamfers, rabbets, and tenons.

Today, most of the jointers produced for the home-workshop market have 6⅛"-long knives, meaning that they will cut a 6⅛"-wide swath. Although you could purchase a lower-priced



ANATOMY OF A JOINTER

CONSTRUCTION BASICS

The ultimate test for any power tool, of course, is to put it through its paces. There is a lot you can learn about a jointer, however, before you even flip the ON switch.

First, what is the machine made of?

Nearly all the jointers on the market have plenty of cast iron in their constitutions. This makes for stable, but heavy machines. If you buy a jointer through the mail you will pay freight on every pound.

The Delta 37-280 makes a slight departure from the cast-iron trend by using extruded aluminum—a light but stable material—in its fence.

Three 6" jointers, from left: Foley-Belsaw model 445, Grizzly model G1182, and Total Shop model 915.

The big and the small of it, right: Sears 4" model 236221 is dwarfed by the Grizzly 8" model G1018. For most jointing tasks, you can get good results with a 6" machine like the Jet model JJ6 shown at left. Since they are not 6" models, we didn't include the Sears or Grizzly machines in the chart on page B38.

4" model or one of the recently affordable 8" models (more about these later), we will concentrate on the price-competitive 6" market. Here you will find plenty of models to choose from, including the 13 we looked at.

HOW A JOINTER WORKS

To understand how a jointer does what it does, think of it as a motorized hand plane turned upside down. In place of the hand plane's sole, jointers have two *tables:* one for *infeed* of the workpiece and one for *outfeed,* as shown in the drawing *opposite*. Between the tables sits a rapidly rotating *cutter head* containing two or three knives.

To pass a workpiece over the cutter head, you normally set the infeed table from 1/32" to 1/8" below the top of the cutter head, depending on how much stock you want to remove with each cut. The outfeed table sits flush with the top of the cutter head. Combined, the infeed and outfeed tables make up the *bed* of the jointer. As you pass a workpiece across the bed, the cutter-head guard swings out of the way, and the knives remove the desired amount of material. During the cut, you hold the stock firmly against a *fence* that adjusts from 45° to 90°, producing a beveled or square edge.

HOW MUCH JOINTER DO YOU NEED?

Since you'll use a jointer mostly for edge work, you might think that a 4" machine such as the Sears model 236221 shown *above right* has all the capacity you need. But as the photo shows, the differences between 4" and larger jointers go well beyond the length of their knives. Most importantly, the majority of 6" jointers have 40" or longer beds and 28" or longer fences that allow you to comfortably joint stock up to 6' long. With a bed length of only 21½" on the Sears model, you'd have a hard time jointing boards longer than 4'.

Here's some good news if you joint stock over 6' long: You can now buy Taiwanese-made 8" jointers for under $1,000. For example, the Grizzly model G1018 that the Sears 4" jointer is sitting on sells for $695 plus shipping, and has a 65½" bed. At 460 pounds with a 220-volt motor, it's a heavy-duty performer.

Three more 6" jointers, from left: Sears model 23220, Jet model JJ6, and Delta model 37-280. All of these come with stands.

The Ryobi JP-155 separates itself even more from the crowd by setting cast-aluminum tables and a fence on a lightweight plastic base. Ryobi engineers thoughtfully covered the outfeed table with a smudge-free stainless-steel sheet for long wear.

TAKING THE STAND

With the exception of the Ryobi and the 4" Sears jointer, all of the machines we tested come with stands. All the stands were stable except for the Total Shop 915, a condition the company plans to correct.

We especially liked the Grizzly's stand. It has a chip chute that directs cutting debris away from the motor and motor pulley, conveniently directing the debris into a nearby trash container.

(continued)

16 MACHINES THAT GIVE YOU THE EDGE

MANUFACTURER/ IMPORTER	MODEL NUMBER	BED LENGTH (INCHES)	CUTS PER MINUTE	MAXIMUM CUTTING DEPTH (INCHES)	MOTOR TYPE[3]	MOTOR AMPS	MOTOR VOLTS	KNIFE HEIGHT ADJUSTMENT SCREWS[4]	FENCE MATERIALS[5]	TABLE MATERIALS[5]	FENCE HEIGHT (INCHES)	FENCE LENGTH (INCHES)	ADJUSTMENTS OUTFEED TABLE DEPTH	ADJUSTMENTS OUTFEED TABLE LEVELING	ADJUSTMENTS INFEED TABLE LEVELING	TABLE ADJUST. CONTROL[6]	STANDARD EQUIPMENT[7]	WARRANTY JOINTER	WARRANTY MOTOR	U.S. SERVICE CENTERS	COUNTRY OF ORIGIN[8]	WEIGHT (LBS.)	SUGGESTED PRICE[7]
AMT	4122	42	N/A	1/8	Motor not included			Y	CI	CI	3 15/16	27 13/16	Y	Y	Y	C	S	10 yrs.	-	1	T	202	459[9]
Bridgewood	BW8J	66	13500	1/2	I	N/A	110/220	N/A	CI	CI	4	36	Y	Y	Y	K	S	1 yr.	1 yr.	-	T/U	446	828
Delta	37-154	55 1/2	16,500	1/2	I	14/7	115/230	Y	CI	CI	5	36	Y	Y	Y	L	S,PB	2 yrs.	2 yrs.	152	B/U	265	1357
	37-280	35 1/2	12,900	3/8	I	14	115	N	EA	CI	3 3/4	24	N	Y	N	K	S,PB	2 yrs.	2 yrs.	152	T	143	440
	37-350[8]	76 1/2	16,500	5/8	I	N/A	115/230	Y	CI	CI	5	36	Y	Y	Y	L	S,PB	2 yrs.	2 yrs.	152	B	335	1782
Foley-Belsaw	445	45	14,490	1/2	I	12/6	110/220	N	CI	CI	4	28	Y	Y	Y	C	S	1 yr.	90 days	1	T	197	425
General	1180-1	42 1/2	12,600	1/2	I	12/6	115/230	N	CI	CI	4	35	Y	Y	Y	C	S	1 yr.	2 yrs.	6	C	226	800
Grizzly	G1182	47	15,000	1/2	I	13/6.5	110/220	N	CI	CI	4	29 1/4	Y	Y	Y	L	S	90 days	1 yr.	2	T	260	325
	G1018	65	15,230	1/2	I	16/8	110/220	N	CI	CI	4	36	Y	Y	Y	L	S	90 days	1 yr.	2	T	460	695
Jet	JJ6	42 1/2	13,500	1/2	I	12/6	115/230	N	CI	CI	4	28	Y	Y	Y	C	S	1 yr.	1 yr.	530	T	194	465
Lobo	JT-0006	42 1/2	13,500	1/2	I	6/12	110/220	Y	CI	CI	4	28	Y	Y	Y	K	S	1 yr.	1 yr.	N/A	T	205	379
Powermatic	1500040	48	15,000	1/2	I	14	115	Y	CI	CI	4	34 1/2	Y	Y	Y	L	S	1 yr.	1 yr.	425	U/J	290	1340
Ryobi	JP-155	28 1/2[1]	16,000[2]-32,000	3/32	U	10.5	120	Y	CA	CA/SS	2 5/8	28	N	N	N	K	PB	1 yr.	1 yr.	165	J	27	602
Sears	23220	36	12,900	1/8	I	8	120	Y	CI	CI	3 1/4	33	N	N	Y	K	S,PB	1 yr.	1 yr.	900	T	173	385
Total Shop	91520	45	19,500	3/8	I	14/7	110/220	Y	CI	CI	4	36	Y	Y	Y	C	S	1 yr.	1 yr.	1	T	197	369
	92900	66	N/A	1/2	I	18/9	110/220	Y	CI	CI	4	36	Y	Y	Y	C		1 yr.	1 yr.	1	N/A	560	895

1. Increases to 54 1/2" with two bed extensions.
2. Variable speed
3. (I) Induction; (U) Universal
4. All models have 3 knives. The Ryobi JP-155 has 2.
5. (CA) Cast Aluminum; (CI) Cast Iron; (EA) Extruded Aluminum; (SS) Stainless Steel
6. (C) Crank; (K) Knob; (L) Lever
7. (PB) Push Blocks; S (Stand)
8. (B) Brazil; (C) Canada; (J) Japan; (T) Taiwan; (U) USA; (T/U) Taiwan Jointer, USA Motor
9. Four electrical options available.

HOW DO YOU ADJUST INFEED?

Of the few controls on a jointer, you'll probably use the infeed-elevation control most often. For this frequent change, we preferred the smooth and accurate crank-type controls found on most of the machines. Many manufacturers place this crank directly underneath the infeed table, but Jet positions the infeed and outfeed controls on the front of its model JJ6, making them easier to reach.

Knob controls on the Delta 37-280 and Sears 23220 work much like the cranks. Lever-operated controls on the Grizzly G1182 let you quickly adjust the table up and down. However, our tests showed that these levers make fine-tuning for a precise depth of cut difficult, and actually prolong the time required for adjustment.

Most machines we tested had adjustments for the elevation and leveling of the outfeed tables. However, since all of the tables were true and level on the models called in for our tests, a lack of outfeed table adjustments does not appear to be a liability.

The infeed table, on the other hand, takes a pounding over time from dropped boards that could force it out of level. With the exception of the Ryobi JP-155, all the machines have infeed-table leveling controls. Al Nielsen of Ryobi says his company doesn't see a need for such adjustments because "our high-tech die-casting process enables us to maintain very tight tolerances and plenty of strength in the infeed table." We agree with Nielsen's assessment of the machine's high-quality castings, but we still advise you to avoid dropping heavy boards on its infeed table.

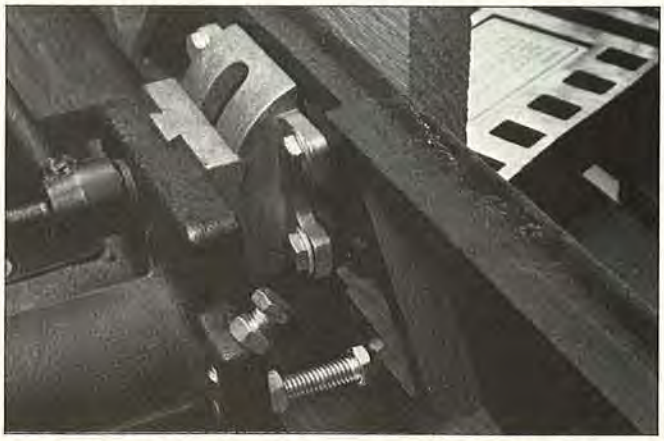
HOW DO YOU ADJUST THE FENCE?

The Sears 23220 has a fence mounted on the end of its outfeed table—a drawback in our opinion.

Besides infeed-table adjustments, you'll also find yourself frequently adjusting the fence in two ways: across the width of the cutter head to wear the knives evenly, and tilted for bevel cuts.

Some woodworkers might disagree, but we prefer fence controls located at the center of the fence over those mounted at the end of the fence such as on the Sears 23220, which is shown *at left,* and the Total Shop 915. Why? We found that the center-mounted controls adjust faster and lock the fence more securely.

Among the centered controls, we appreciated the simplicity of the positive 45° and 90° stops common to the Jet JJ6 and the Foley-Belsaw 445, as shown *above.*



Two bolts serve as quickly adjustable 45° and 90° stops on the Jet model JJ6 and Foley-Belsaw model 445.

CHANGING KNIVES

Nothing hurts the performance of a jointer more than dull knives. And, when it's time to resharpen them, you'll think highly of a machine that makes removing and resetting as simple as possible.

Only two of the jointers tested—the Ryobi JP-155 and the Sears 23220—have blade-adjustment screws that allow you to set the knives at the height of the outfeed table by means of two screws alongside the knives.

With cutter heads that don't have adjustment screws, adjusting the blades requires that you pry with a screwdriver or other instrument.

*Grizzly, **top,** has three blade-lock bolts, no height-adjustment.*

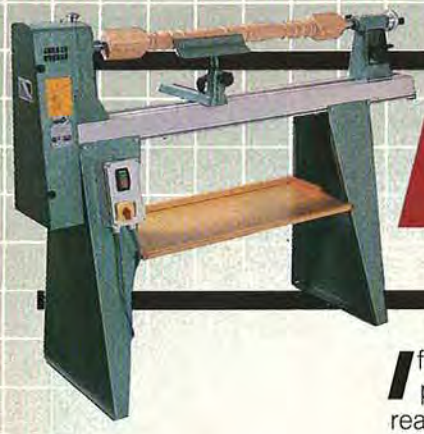
*Ryobi, **bottom,** has four lock bolts, two height adjusters.*

SPEED: NO SUBSTITUTE FOR RPM

We jointed a variety of woods with ease on all of the test machines, and happily, none of them lacks power. But, the Ryobi JP-155 produced a far smoother finish than any of the others. Why? With jointers, the more cuts per minute the smoother the surface of your workpiece will be. Thanks to the rapidly turning universal motor of the Ryobi JP-155, this mighty tyke of a jointer (it weighs only 27 pounds) produces up to 32,000 cuts per minute. Induction-motor jointers produce no more than 24,600 cuts per minute. ■

Only one jointer—the Ryobi JP-155—has a variable-speed control.

This lets you dial down the noise level with narrow and soft stock.



LATHES

Nothing puts a spin on a project quite like a lathe. Let us show you a-a-round!

HOW MUCH LATHE DO YOU NEED?

Print this article

If you'll be turning small projects, or if you're not ready to go full-bore into turning, consider a lightweight, inexpensive lathe. You'll get good results, with some limitations. Prices start as low as $95.

Most lathes fall into the $650–$1,000 range, where you'll find a wide choice in features and capabilities.

Top-of-the-line lathes cost from $1,700–$3,000. These machines reflect superb quality and, as you'd suspect, are designed for the commercial market. Look around and you might find a good buy in a used commercial tool that still has good bearings and a true bed.

ANATOMY OF A LATHE

On almost all other woodworking equipment, the cutting tool spins, turns, or oscillates into the work piece. Not so with the lathe. Here the cutting edge remains stationary while the machine moves the wood into the tool.

At the lathe's business end, a ***headstock*** includes a motor that drives the headstock's ***spindle.*** The spindle in turn grips a ***center,*** any of a variety of short shafts pointed or threaded to hold wood.

To turn a piece "between centers," as illustrated in the drawing *opposite,* you lock the work between the headstock spindle's center and a second center and spindle at the ***tailstock.*** Then you start the motor, lay a ***chisel*** on the lathe's ***tool rest,*** and ease the chisel's edge into the spinning wood. Almost before you know it, you've quite literally turned a hunk of square wood into a graceful spindle, leg, or other rounded object.

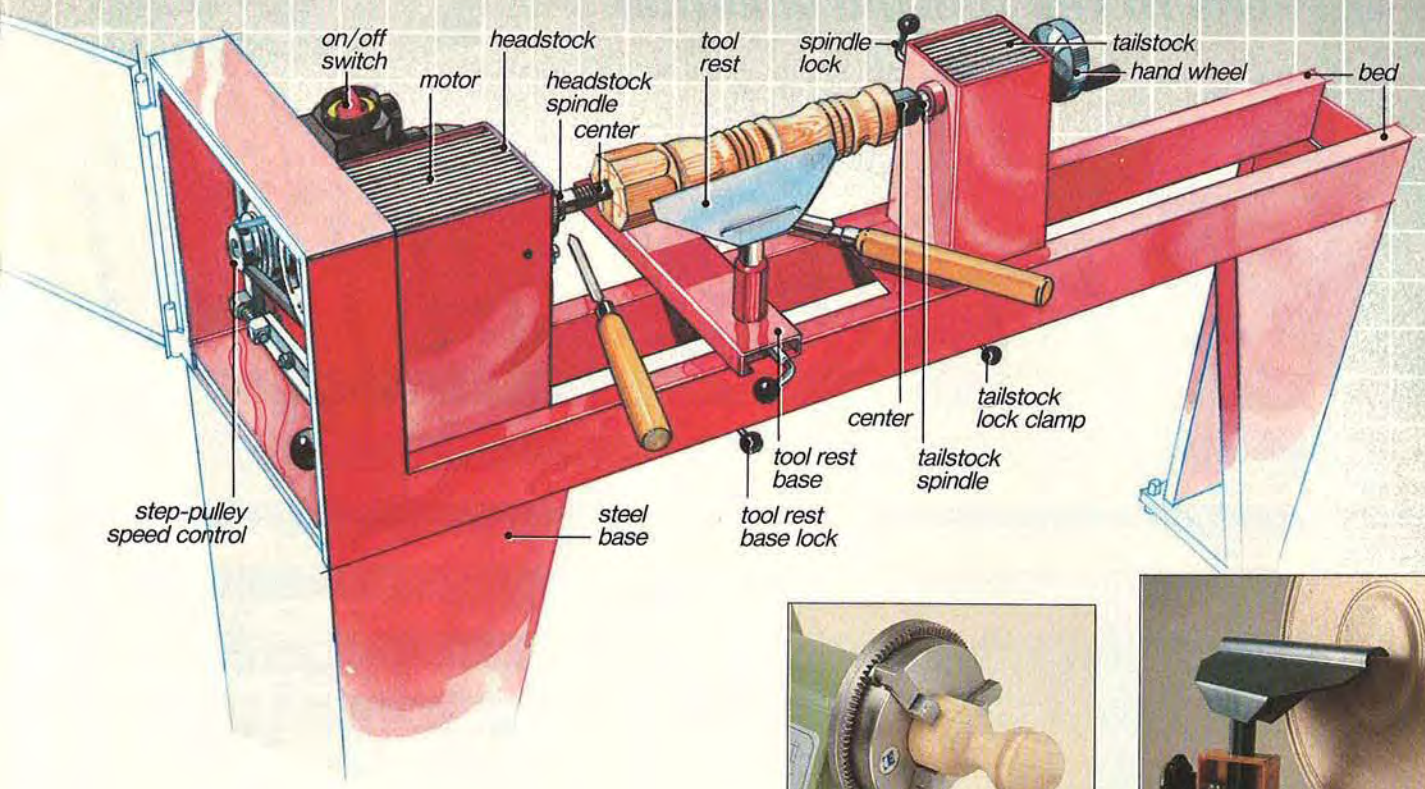
You can also adapt the lathe for turning bowls, trays, and other flat or round objects, as shown in the photos *opposite center.*

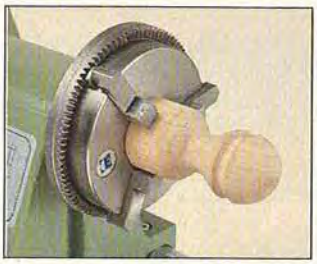
WHAT'S THE BED MADE OF?

The key job of any lathe bed is to securely support the head- and tailstocks, tool rest (or tool rests), and other accessories. There are nearly as many styles of lathe beds as there are lathe manufacturers. Each style has its advantages, either in function, cost, or both.

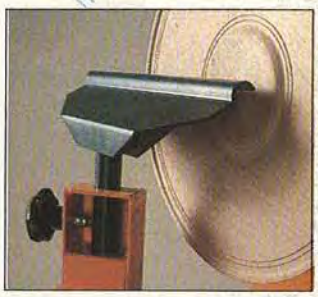
Rigid cast-iron beds absorb shock and wear well. Cast-iron beds also accommodate the innovative and versatile "gap-bed" design shown in our photo of the General *at right.* With this kind of lathe, a recessed portion of the bed beside the headstock allows you to do faceplate turnings somewhat larger than

"Gap-bed" lathes such as the General shown in the photo, above, expand the diameter of faceplate projects the lathe can accommodate. The gap, which is adjacent to the headstock, adds a full 1½" to the clearance between spindle and bed.

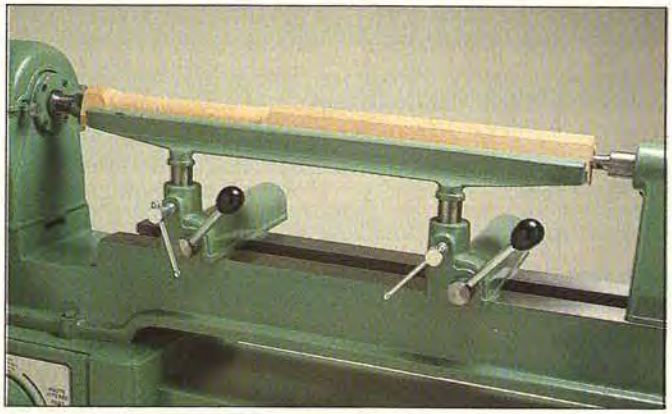




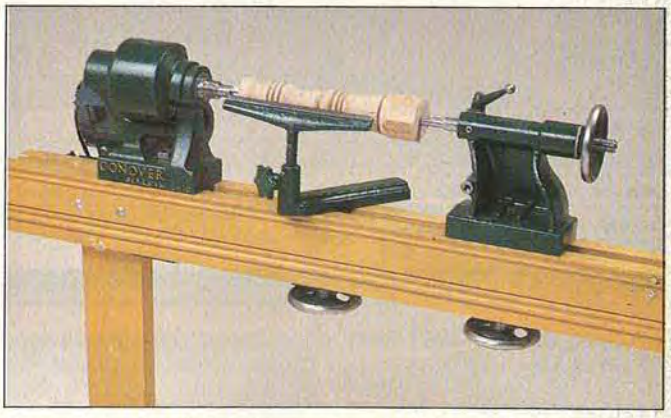
To turn bowls, attach a faceplate to the headstock spindle, swivel



the tool rest 90 degrees, and use the lathe without the tailstock.



Iron tool rests clamp to the General's iron rails.



Conover's head and tailstocks mount on wood beams of any length.

those possible with the main bed.

Tubular steel twin rails appear in all of the multitool lathes, and on some other makes as well. Other bed styles of varying gauges and materials include C-channel beds of cold rolled or formed steel, box beams, monorails, and even, in one case, wood.

Yes, that's right, wood. Conover furnishes heavy head, tailstock, and tool-rest assemblies you can mount on wood beams of any length to suit your project, as shown *above right.* These can be useful when turning very long pieces, such as posts for a Jenny Lind bed.

A word of advice to the beginning turner. As your expertise grows, you'll probably want to explore special features that are designed to be attached to the lathe bed. When you do, you may have problems securing accessories to round-rail or monorail tools.

(continued)

29 ANSWERS TO THE TURNING QUESTION

MANUFACTURER/ IMPORTER	MODEL NUMBER	BED LENGTH[1]	SWING	MAX. FACE-PLATE DIAMETER (INBOARD)	OUTBOARD	BED CONSTRUCTION[2]	HEAD/TAIL CONSTRUCTION[3]	BEARINGS[4]	INDEX	SPEED CONTROLS[5]	MOTOR AMPS	WEIGHT (WITH MOTOR AND STAND)	COUNTRY OF ORIGIN[6]	SUGGESTED PRICE
AMT	373	55 (O)	12	12	N	TT	CI	B	N	[7]	[8]	30[8]	U	95
	4370	44 (O)	12	12	N	CI	CI	B	Y	Var.	[8]	100[8]	U	329
Arnall	A500	39 (B)	20	20	N	BB	S	B	N/A	6	N/A	425	U	1196
Bridgewood	BW-1240	37 (B)	12	4⅜	Optional	TT	CI	B	Y	5	N/A	82[10]	T	169
Conover	CL16-010	Unlimited	16	16	Y	W	CI	TR	Y	Var.	13.5	450	U	[13]
Delta	46-204M	39 (B)	12	16	Y	CI	CI	B	Y	4	[8]	170[9]	U	1196[9]
	46-205	39 (B)	12	16	Y	CI	CI	B	Y	4	N/A	305	U	2311
	46-541	39 (B)	12	16	Y	CI	CI	B	Y	Var.	N/A	410	U	2390
Elecktra-Beckum	HDM 800	32 (B)	15	15	N	MT	CAL	B	N	4	6	125[10]	WG	475[10]
	HDM1000	40 (B)	15	15	N	MT	CAL	B	N	4	6	135	WG	575[9]
Garrett Wade	03B01.01	40 (B)	16	6	N	TT	CI	B	N	5	12	200	T	685[10]
General	160-1	38 (B)	12	15	Y	CI	CI	B	Y	4	8.8/4.4	320	C	950[14]
	160-2	38 (B)	12	15	Y	CI	CI	B	Y	Var.	8.8/4.4	380	C	1158
	260-1	38 (B)	12	16½	Y	CI	CI	B	Y	Var.	24/12	610	C	2300
Grizzly	G1025	40 (B)	15	8	Y	FS	CI/FS	B	N	4	8	100[10]	T	155[10]
	G1495	40 (B)	14	8	Y	CI	CI	B	Y	Var.	12/6	350	T	625
Hegner	HDB 175	36 (B)	13¾	13¾	Y	BB	CA	B	N	4	7.1	110	WG	1375
	HDB 200	39⅜ (B)	15¾	15¾	N	BB	CA	B	N	4	11.5	250	WG	2295
	HDB 200/1250	49⅛ (B)	15¾	15¾	N	BB	CA	B	N	4	11.5	290	WG	2495
Jet	JWL 1438-1	38 (B)	10¼	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	504	N/A	N/A
Kity	664[11]	40 (B)	15½	15½	N	CA	CA	B	N	3	6	166	F	1195[15]
Konig-Dreschelbank	K1000	39 (B)	16	6	Y	BB	CI	B	Y	5	13	320[10]	WG	1795[10]
MiniMax	T124	47 (B)	16½	12	N	BB	FS	B	N	N/A	N/A	375	I	2295
Powermatic	EDP-1450300[12]	39 (B)	12	7	Y	CI	CI	B	Y	Var.	9.2/4.6	439[8]	U	2891[8]
	1450330	39 (B)	12	7	Y	CI	CI	B	Y	4	9.2/4.6	439[8]	U	2392[8]
Sears	22816	36 (B)	12	12	N	TT	CI	B	Y	4	N/A	88	U	250
Total Shop	9001	40 (B)	14	16	Y	CI	CI	B	N	Var.	12/6	290	N/A	615
Value Craft	8232	37 (B)	12	12	Y	TT	CI	B	Y	5	8	93	T	250
Williams-Hussey	L82	46 (B)	12	12	Y	RC	CI	B	Y	4	8.7	121[8]	U	498[8]

1. (O) Overall; (B) Between Centers
2. (BB) Box Beam; (CI) Cast Iron; (TT) Steel Twin Tube; (RC) Cold-Rolled C-Channel; (W) Wood; (MT) Steel Mono Tube; (FS) Formed Steel
3. (CI) Cast Iron; (FS) Formed Steel; (CA) Cast Alloy; (CAL) Cast Aluminum Alloy; (S) Steel
4. (B) Ball; (TR) Tapered Roller
5. Indicates number of pulley steps.
6. (C) Canada; (F) France; (T) Taiwan; (U) USA; (WG) West Germany
7. Available as accessories
8. Motor not included
9. Lathe only
10. Without stand
11. Also available with 60" B bed, and with variable speeds
12. Also available with gap bed, and with variable speeds
13. List price varies from $1,200 to $2,200, depending on assembly work done by buyer.
14. Also available as variable-speed model ($1,158). Motor extra.
15. Three-speed model available ($1,425).

HOW'S THE HEADSTOCK?

Except for minor controls and possibly a ball-bearing center in the tailstock, the headstock is the only part of the lathe that has any moving parts while turning. That's why it's so vital that the headstock be sturdy and securely attached to the bed.

The headstock has to be its toughest when a workpiece is out of balance, either by the nature of the wood or by the design of the turner. The bearings, shaft, and other head parts take the full brunt of vibration, as well as hammering and dragging by the chisel as it presses its way into the block.

Speeds of up to 2,500 rpm combine with the stress of turning and cutting to make ball or roller bearings the only practical choices; sleeve bearings soon succumb to the stresses.

For faceplate jobs, look for a lathe with outboard mounting.

MECHANICAL VERSUS ELECTRICAL SPEED CHANGES

There are several approaches to speed control on a wood lathe. The most common is a three- or four-step pulley system like the one on the lathe pictured *at right.*

A few lathes have mechanically operated dial- or slide-lever speed controls that let you change speeds without shutting it down. You can also change speed electrically.

We prefer the mechanical method of reducing speed through gears or belts. When you slow a motor by cutting voltage, horsepower drops as well. On the other hand, when you mechanically reduce speed, horsepower at the spindle increases. This is important early in a project when you're working at slower speeds.

Mechanical speed-reduction systems increase horsepower at the spindle. Most have three- or four-step pulleys.

DOES THE TAILSTOCK GET A GOOD GRIP?

To do its job, the tailstock must have two important traits: First, it must lock securely to the lathe bed. Since the workpiece is clamped between the head- and tailstocks, the tailstock must not move or the wood will fly off the lathe.

The best-engineered units have a locking nut, lever, or wheel that is easy to reach and simple to tighten. Remember, too, that you'll want to be able to adjust the tension on locking levers and wheels.

Second, the tailstock's "dead" center must drive securely into the end of the stock. There are several types of dead centers for various jobs, so being able to change them is a plus. Some lathes have scales mounted on the spindle in the tailstock for accurate measuring while drilling. ■

The tailstock's adjustable spindle should move in and out 2 or more inches for use with a drill chuck, as shown here.

PORTABLE BELT SANDERS

HOW MUCH SANDER DO YOU NEED?

Print this article

Most manufacturers offer several sizes of sanders—typically 3×18", 3×21", 3×24", and 4×24". Usually, machines with longer and wider belts sand faster than smaller machines. For the home, a 3×21" or 3×24" sander performs nearly every task in a reasonable amount of time.

When considering belt sizes it makes sense to pay just as much attention to the size of a machine's base. Why? It's the size of the base that determines how much sandpaper comes in contact with the work surface at any one time.

HOW THEY WORK

The anatomy drawings *opposite* give inside looks at the workings of the two main types of portable belt sanders. Flip the switch to its ON position and you fire up a universal motor that sets a pair of ***rollers*** into motion. These rollers, in turn, move a continuous abrasive belt over a flat surface referred to as a ***base, pad,*** or ***shoe.***

Base designs differ, but on most sanders, a ***cork pad*** and ***slip plate*** fit between the ***platen*** and the ***sanding belt.*** The platen establishes a rigid, flat surface for the pad and plate to sit on. Since a sanding belt would wear the platen over time, a replaceable slip plate or graphite pad contacts the belt's back side on most sanders. The cork helps the slip plate conform to the platen shape.

TRANSVERSE VS IN-LINE

Depending on which model you select, the sander will have one of two motor configurations: ***transverse*** or ***in-line.*** How do they differ? Transverse machines have motors mounted across the width of the machine, so the arbor turns the same direction as the rollers.

Lately, more and more manufacturers have added in-line machines to their product lineup. In-line sanders have motors mounted parallel to the length of the machine. Because the arbor turns at 90 degrees to the rollers, in-line sanders have ***right-angle speed-reduction gearing*** to transfer the motor's power to the ***drive belt.***

Both types of machines have a fan with two sets of ***fins:*** One set cools the motor and the other evacuates dust out through a ***port*** and into a bag. To regulate the speed of the motor, some machines come equipped with ***electronic speed control.*** To provide a means of keeping the belt centered on the rollers, most machines have a ***tracking control knob.***

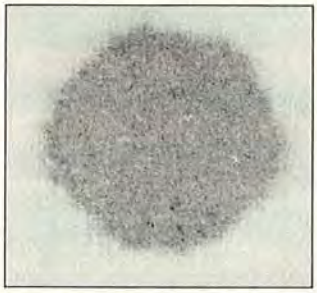
HOW DOES IT HANDLE?

Just as a tightrope walker has to balance his weight directly over the high wire, good belt-sander balance depends on how much of the sander's weight sits directly over the sanding belt. As shown *at right,* the low center of gravity and weight placement of in-line sanders make them less prone to side-to-side tipping than most transverse belt sanders.

Transverse sanders have certain advantages here, too. For example, you can control most of these machines on and above surfaces with only one hand, as shown *opposite.* Also, based on our experience, we found the D-shaped handles on transverse units more comfortable than those on in-line machines.

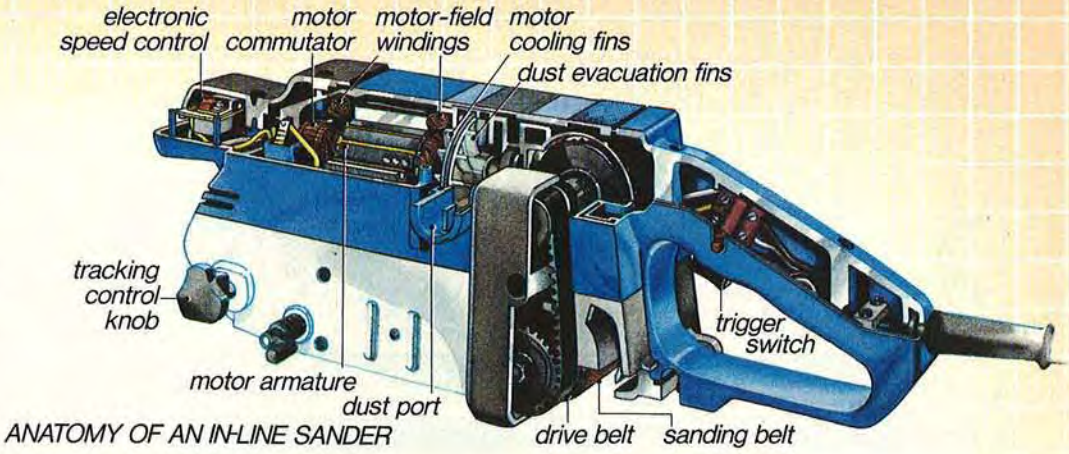
The in-line design of the Ryobi model BE-321, right, makes that sander less tipsy than the transverse Milwaukee model 5920.

Smooth surfaces don't just happen. You have to take a belt sander in hand and make them that way. Here's how to audition the machine that's just right for you.

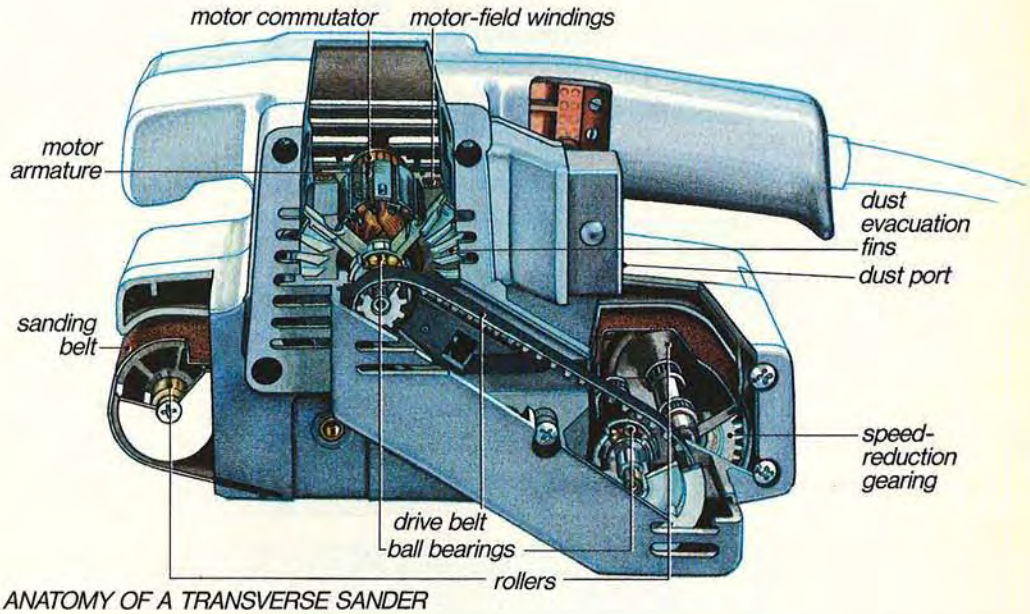


The Black & Decker model 7451 left a flat, uniform test pattern.

The Ryobi model BE-321 didn't do so well on the same material.



ANATOMY OF AN IN-LINE SANDER



ANATOMY OF A TRANSVERSE SANDER

You need two hands with in-line sanders such as the Freud LC75, left, one hand with transverse machines like the Metabo 0775.

Among the in-line sanders, we found the Ryobi BE-321 the easiest to control, in part because of the flat shape of its front handle. We felt less in control when operating sanders with round front knobs such as those found on the AEG, Freud, and Metabo units.

We've spoken with lots of woodworkers about this subject, and they seem to be split on their preference for a light- or heavyweight sander. If you do almost all of your work on horizontal surfaces such as tabletops, a heavy sander (over 10 pounds) can be a plus. Why? You don't have to exert force on a heavy machine (which could cause it to tip slightly); its own weight helps the machine sand efficiently. But, if you will be operating a belt sander on vertical surfaces, we recommend that you buy the lightest sander you can.

(continued)

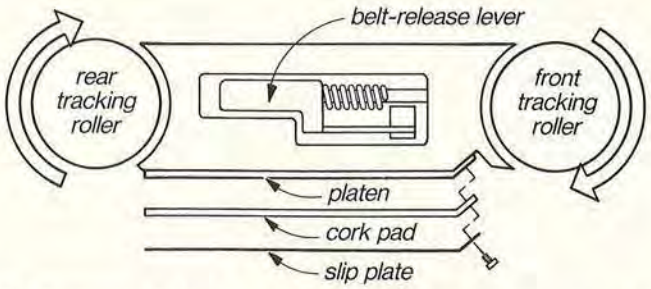
32 MACHINES WITH TRUE GRIT

MANUFACTURER/ IMPORTER	MODEL NUMBER	BELT SIZE (WxL)	SANDING AREA (WxL)	SPEED[3] (FEET PER MINUTE)	MOTOR POSITION	AMPS	BEARINGS	BELT CHANGE	DUST COLLECTION	STANDARD ACCESSORIES[7]	OPTIONAL ACCESSORIES[7]	SANDS FLUSH	CORD LENGTH	AUTHORIZED SERVICE CENTERS[5]	WEIGHT (LBS.)	COUNTRY OF ORIGIN[5,6]	SUGGESTED PRICE
AEG	HBSE 75S	3x21	3x5¼	660-1250	I	7.8	B	L	Y	B,DB,HS	F,SF,VA	Y	12	180	8.4	WG	269
Black&Decker	7447	3x21	3x4½	600	T	3.4	B,S	P	N	B	-	Y	6	215	7	U	89
	7451	3x24	3x4½	1200	T	5.2	B,S	L	Y	B,DB	-	Y	6	-	8.75	U	231
	2732	3x24	3x4¾	1180/1475	T	8.7	B,R	L	Y	B,DB	-	Y	8	-	9.7	J	295
Bosch	3270D	3x21	3x6⅜	1080	I	5	B,R,S	L	Y	B,DB	F,VA,H,VS,SF	Y	8	184	7.9	S	225
	1273DVS	4x24	4x6	1150-1550	T	10.5	B,R,S	L	Y	B,DB	SF,HS,VA,F	Y	8	-	14.8	U	339
Elu	4023	3x21	3x5¼	1100	T	5.2	B,R	L	Y	B,DB	F,HS,SF,VS	N	10	215	6.2	S	278
	4024	3x21	3x5¼	475-1100	T	5.2	B,R	L	Y	B,DB	F,HS,SF,VS	N	10	-	6.2	S	307
	4029	4x24	4x4⅓	1250	T	9.2	B,R	P	Y	B,DB	SF	N	10	-	13.9	S	499
Freud	LC75	3x21	3x5¼	1475	I	9.6	B,R,S	L	Y	B,DB	-	Y	8	70	10.75	SP	291
	LC110	4x24	4x6¾	1475	I	9.6	B,R,S	L	Y	B,DB	-	Y	8	-	11.62	SP	311
Hitachi	SB75	3x21	3x4¾	1180/1475	T	8.7	B	L	Y	B,DB	HS	Y	8½	167	9.7	J	261
	SB10T	4X24	4X6½	1150/1380	T	8.7	B	L	Y	B,DB	HS,SF	Y	8½	-	11.7	J	317
Makita	9900B	3x21	3x5⅜	1180	T	7.8	B,R	L	Y	B,DB	-	Y	16	183	10	J	268
	9924B[1]	3x24	3x5⅜	1300	T	7.8	B,R	L	N	N/A	-	Y	16	-	10.2	J	258
Metabo	0775	3x21	3x5¾	1300	T[2]	5.5	B,R	K	Y	B,DB	-	Y	14	111	10	WG	283
Milwaukee	5920[1]	3x24	3x6½	1400	T	10	B,R,S	L	N	B	CC	N	8	313	13.5	U	315
	5931[1]	4x24	4x6½	1400	T	10	B,R,S	L	N	B	CC	Y	8	-	14.25	U	326
Porter-Cable	351[1]	3x21	3x5	1300	T	7	B,R	L	N	B	CC	Y	7	180	10.75	U	215
	361[1]	3x24	4x5⅜	1550	T	10.5	B,R	L	N	B	CC	Y	7	-	13.75	U	290
	363[1]	4x24	3x5⅜	1550	T	10.5	B,R	L	N	B	CC	Y	7	-	14¼	U	310
Ryobi	B-7075	3X21	3x5¼	1180	T	8.4	B,S	L	Y	DB	CC	Y	8	153	9.6	J/U[4]	227
	BE-321	3x21	3x5¼	775-1148	I	6.0	B,S	L	Y	B,DB	F,HS,SF	Y	8	-	7.9	J/U[4]	265
	B-7100	3x24	3x6¾	1500	T	8.4	B,S	L	Y	DB	-	Y	8	-	9.7	J/U[4]	273
Sears	11715	3x21	3x4¾	1300	T	7.5	B,S	L	Y	DB	CC,VS,VA	Y	6	900	12.7	U	76
	11792C	4x21	4x4¾	1300	T	7.5	B,R	L	Y	DB	CC,VS,VA	Y	10	-	18	U	92
Skil	7102	2½x16	2½x4½	600	T	2.8	B,R	L	N	B	VA	Y	6	141	4.5	U	67
	7313	3x18	3x5	700	T	4.5	B,R	L	Y	B,DB	HS,SF	Y	6	-	5.25	U	79
	7621	3x21	3x5⅜	775-1150	I	6	B,R	L	Y	B,DB	HS	Y	8	-	8	J	235
	7724	3x24	3x7	1500	T	9	B,R	L	Y	B,DB	-	N	8	-	9.75	J	250
	7320	3x18	3x5⅛	450-700	T	4.5	B,R	L	Y	B,DB	HS,SF	Y	6	-	5.25	U	98
Wen	3600	3x18	3x3	1000	T	4	S	P	Y[3]	B	VA	N	6	1	6.5	U	69

1. Same model available with dust evacuation and dust bag.
2. Motor mounted between rollers.
3. Only with vacuum hose attached
4. May be manufactured in the U.S. or in Japan
5. Elu tools are serviced at Black & Decker centers. If a Sears service center cannot repair a tool, the tool will be sent to one of three specialty repair centers. Wen tools must be mailed to one service center in Chicago.
6. (J) Japan; (S) Switzerland; (SP) Spain; (U) USA; (WG) West Germany
7. (B) Sanding Belt; (CC) Carrying Case; (DB) Dust Bag; (F) Fence; (HS) Horizontal Support; (SF) Sanding Frame; (VA) Vacuum Attachment; (VS) Vertical Support

CHECKING OUT THE BASE

No matter how much quality a manufacturer builds into a particular tool, a sander must have a flat base before you can do high-quality work with it. Most typically, a sander with a faulty base will cut deeper near its front and back with little stock removal near its middle. Not all the machines we tested had flat bases. Before buying any sander, if possible remove its belt and hold a straightedge against the surface (slip plate or graphite pad) that contacts the sanding belt. If the surface isn't flat, try another machine.



The business end of a belt sander is its base. We found several machines that had either less-than-flat platens, or slip-plates that bulged where they mounted to the platen. In some cases, results varied from one machine to another of the same model.

DO YOU NEED SPEED CONTROL?

Fast belt sanders have one advantage over slower units: They remove stock at a quicker rate. But, in certain situations it helps to slow things down, so we're happy to see an increasing number of variable-speed sanders coming onto the market. You'll appreciate this feature when you want to avoid burning a surface, especially with fine-grain belts. Working on a veneer surface, you'll value the control you get with a slow speed.

Slower speeds are also quieter. By their nature, portable belt sanders make a lot of noise. Nevertheless, we comfortably used some without ear protection. Others were loud or irritatingly high-pitched, or worse, both. To get an idea of how much noise you can expect from a unit you're considering, run it at full speed.

With the Ryobi BE-321 you can change speeds while sanding.

We had to stop sanding to change speed of the AEG HBSE 75S.

ATTACHMENTS: THREE MUSTS

Rarely does an accessory get us so excited that we feel all our readers should own one, especially when only a handful of companies include the accessory in their product line. For sanding frames, we make an exception.

SANDING FRAMES

A sanding frame works like the sole of a hand plane: It holds the sanding belt above the low spots in a surface, just as the plane suspends its blade above these "valleys." Supported like this, the belt sander concentrates its abrasive action on high spots, producing a surface as close to a single plane as possible.

SANDER STANDS

Another favorite gadget: a device that holds the sander in a vertical or horizontal position on a benchtop. These accessories range from a pair of simple clamps to secure the sander on its back (Ryobi, Skil) to stands such as the Elu model shown *bottom right.*

*Sanding frames: **From left,** Hitachi and Ryobi (both plastic-on-aluminum bases), Skil (all steel), and AEG (brush bottom).*

DUST BAGS

There's no way around it: Belt sanders kick out a lot of airborne dust that is none-too-healthy to breathe. That's why we recommend that you buy a sander with a dust collection bag, which often is offered as an option. ■

The Elu inversion stand enables you to shape small objects.

WOOD® Magazine announces:

1991 BUILD-A-TOY™

Our Third Annual Juried Contest to benefit deserving kids through Toys-for-Tots

ENTRY DEADLINE: FEBRUARY 1, 1991
Great prizes for every skill level! New Judging Categories!
Prizes for Original Designs and Built from Plans!
Holiday exhibition at the Museum of American Folk Art!
Enter by November 1, 1990 to be eligible for Museum exhibit.

We're proud to invite woodworkers of every age and skill level to participate in the Third Annual WOOD Magazine BUILD-A-TOY Juried Contest.

This year, we've expanded the competition into new areas. Special citations will be awarded to woodworkers who build toys from plans as well as original design entries. There are also several new judging categories.

We've added more valuable prizes contributed by leading WOOD advertisers. Some winning toys will be chosen for editorial features in future issues of WOOD.

There's even an exhibition of winners scheduled for the 1990 holiday season at the Museum of American Folk Art in New York City. (Toys received by November 1, 1990 will be eligible for display in the Museum's Christmas Tree exhibition.)

BUILD-A-TOY is the best way we know of for woodworkers to get the recognition they deserve for great craftsmanship. We'd like as many entries as we can get.

That's because WOOD Magazine's BUILD-A-TOY Competition is also the contest with the biggest heart. The toys you submit will be contributed to the TOYS-FOR-TOTS program of the U.S. Marine Corps Reserve.

Help make some deserving kids happy this Christmas.

1991 BUILD-A-TOY ENTRY DEADLINE: FEBRUARY 1, 1991.

COMPETITION PRIZES AND CATEGORIES

	STUDENT (K-12):	HOME HOBBYIST:	PROFESSIONAL:
DESIGN: These 15 categories are open to original design entries only.			
Grand Prize	KITY: K-5 Machine ($2,000 value)	Delta: $2,500 in merchandise	Freud: $2,000 in merchandise
First Prize	Black & Decker: $1,500 in merchandise	Shopsmith: Mark IV ($1,600 value)	AEG: $1,000 in merchandise
Second Prize	Jet: 14" Band Saw ($579 value)	Grizzly: $500 in merchandise	Skil: $500 in merchandise
Third Prize	American Tool Cos.: $500 in merchandise	Lobo: $500 in merchandise	Wilke: BW1-P Planer ($400 value)
Fourth Prize	Industrial Abrasives: $250 in merchandise	Leichtung: $250 in merchandise	Milwaukee Electric: 4" Belt Sander with Bag ($348 value)
SPECIAL CITATIONS: These 39 categories are open to both original and existing designs.			
Best use of Router	AmMax: Scroll saw	Porter Cable: $1,000 in merchandise	Ryobi: $1,000 in merchandise
Best use of Wood	Adams Wood Products: Turning Squares Constantine's: $100 in merchandise	RBI: 14" Scroll Saw	Makita: $500 in merchandise
Best Carved Toy	Dremel: $500 in merchandise	Dremel: $500 in merchandise	Dremel: $500 in merchandise
Best Finish	Deft: $1,000 in merchandise	Minwax/Watco: $1,000 in merchandise	Performax: ST Sander
Best Truck	How-To Book Club: $100 Membership Toys and Joys: Antique Car Plans	Meisel: $500 in merchandise Dollar Trading: Carving Set	Craftsman Wood Service: Turning Squares Brandmark: Branding Iron
Best Car	Constantine's: $100 in merchandise	Berea: Assortment of Hardwoods	Furniture Designs: Plans
Best Pull Toy	DML: 10" Carbide-Tipped Blade	Formby's: Gift Set	Timbers Woodworking:Gift Certificate
Best Train	Rodale: Woodworking Books	Seven Corners: $250 in Power Tools	How-To Book Club: $100 Membership
Best Bank	Formby's: Gift Set	Fisher Hill: Rip Straight	DML: 10" Carbide-Tipped Blade
Best Airplane	Nova Tool: Branding Iron	Accents in Pine: Set/Blueprints	Constantine's: $100 in merchandise
Most Number of Toy Entries	Accuset Tool: ParaGauge Econ Abrasives: $100/Sandpaper	Woodworkers Supply Corp : $100 Gift Certificate	Diamond Machining Technology: 8" Fine Whetstone
Best Boat	Tarheel Filing: Router Insert	Fisher Hill: Rip Straight	Penn State: Variable Speed Scroll Saw
Best Puzzle	St. Croix Kits: Thumb Piano	MLCS: Master Set	Hardwoods of Illinois: 20 sq. feet of Walnut

WOOD® Magazine's 1991 BUILD-A-TOY Contest

There is no limit to the number of entries. Please provide the following information for each toy submitted.

My entry is: ❑ Original Design* ❑ Built from plans

My skill level is: ❑ Student ❑ Home Hobbyist ❑ Professional

Name _____

Address _____

City _____ State _____ ZIP _____

Daytime Phone (_____) _____

*For Original Design entries: I certify that I have designed and built this toy myself. Should my entry win, I agree to cooperate with WOOD Magazine to supply builder's notes and a bill of materials for publication.

Signature _____ Date _____

Send toys to: 1991 BUILD-A-TOY, WOOD Magazine, 1912 Grand Avenue, Des Moines IA 50309

WOOD® Magazine's Third Annual

BUILD-A-TOY Contest™

1991 RULES

1. Make projects no larger than 2 X 2 X 2'. The primary material should be wood, but may incorporate other materials.

2. Please follow Consumer Product Safety Commission guidelines: nontoxic wood finishes only; no parts smaller than 1 1/4" square on toys for children under three years of age; no sharp corners or points; pull strings longer than 12" should not have beads or other attachments that could tangle and form a loop.

3. Entries must be received by February 1, 1991. All entries must be postpaid; collect entries will be refused. Attach an entry label or a photocopy of an entry label to each toy. If you enter before November 1, 1990, your toy will be eligible for inclusion in the Museum of American Folk Art exhibition in New York City throughout the holiday season.

4. Woodworkers who build toys from existing plans will be eligible for special citation prizes only. Woodworkers who build their own original designs are eligible for design and citation prizes.

5. Entry constitutes permission to use winner's name and photograph for promotional purposes. Employees and family members of Meredith Corporation, their affiliates and subsidiaries are ineligible. Void in Quebec.

6. Winners will be selected and notified by mail on or about April 15, 1991, and will receive the prize directly from the manufacturer/distributor. For a list of winners, send a separate, self-addressed stamped envelope to Build-A-Toy, P.O. Box 11454, Des Moines, IA 50336-1454.

7. Meredith Corporation will donate all entries to the U.S. Marine Corps Reserve Toys-for-Tots program.

8. **For woodworkers who enter their toy as an original design:** Toys must be your own original design. A different approach to an existing toy would qualify. Please do not enter toys with only subtle changes from published patterns.

9. A panel of representatives from the U.S. Marine Corps Reserve, Meredith Corporation and woodworking experts will judge all toys and categories on child appeal, craftsmanship, originality, and durability. The panel's decision will be final.

10. Professional woodworkers include woodworking teachers and anyone earning income by selling wooden items.

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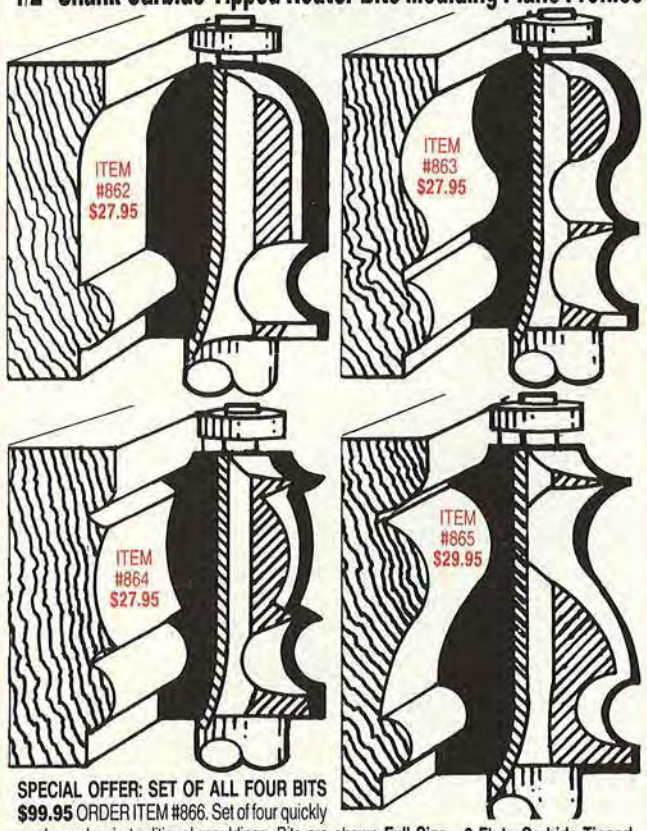

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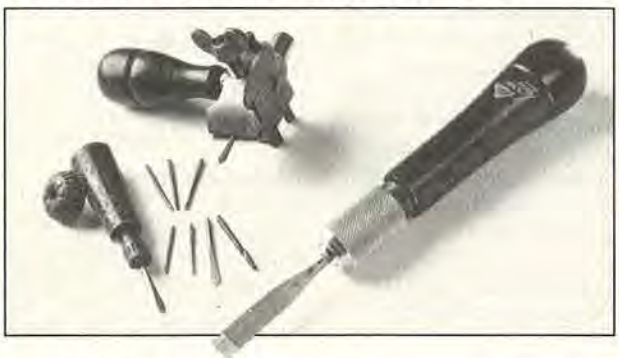


Counterclockwise from top: Alford Hand Vise with four tools and rosewood handle, valued at $50; Stanley's Excelsior iron tool holder with 12 tools and black finish, about $65; Millers Falls No. 5 tool holder with rosewood handle containing nine tools, $40.

Sold by the millions at two dollars or less apiece, combination tool holders were the "poor man's tool kit" for 75 years following the Civil War. Their compact size and versatility made them extremely popular.

Before the development of combination tools, only braces had interchangeable drill bits, fastened by thumbscrews or wedges. The small drills (called gimlets), screwdrivers, awls, files, and other small tools had their own handles. But with the invention of the sturdy, screwed-shell chuck in 1864, quick-switching attachments became possible. The idea for a hollow handle to store unused tools closely followed the invention of the chuck, and the combination tool was the next logical step.

A tool for every taste

Prior to the turn of the century, numerous companies produced combination-tool holders, and there were various features and designs. It was common for one hardware or tool manufacturer to offer five or six models.

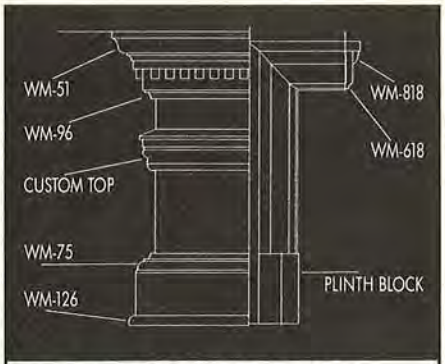
A combination tool's iron or wooden handle could hold as many as 20 diverse tools: gimlet drills, brad awls, leather awls, chisels, files, screwdrivers, gouges, saws, tack lifters, countersinks, reamers, washer-and-gasket cutters, and even hammer heads. Hollow handles and screw caps often featured ebony and rosewood because of their appearance, density, and durability. Iron-handled tool holders, like the one *above,* frequently touted Victorian floral designs, an attractive touch that improved the grip.

The chucks and compression sleeves that held the interchangeable tools were usually a four-pronged jaw arrangement that compressed and released by turning a knurled or winged collar. However, there were variations of this method. For example, Stanley's Excelsior Bit Holder relied on a draw bar and collet. Another patent furnished a small, square wrench to tighten the chuck. Attached to the handle of the Alford Hand Vise was a small jeweler's vise to secure the tools.

A handful of tools can still be a bargain

Combination tool holders still remain affordable. Ranging in price from $20 for a rosewood tool holder in good condition to about $65 for a Stanley Excelsior, these novel tools represent an easy entry into collecting.

Written with Philip Whitby Photograph: Jim Kascoutas



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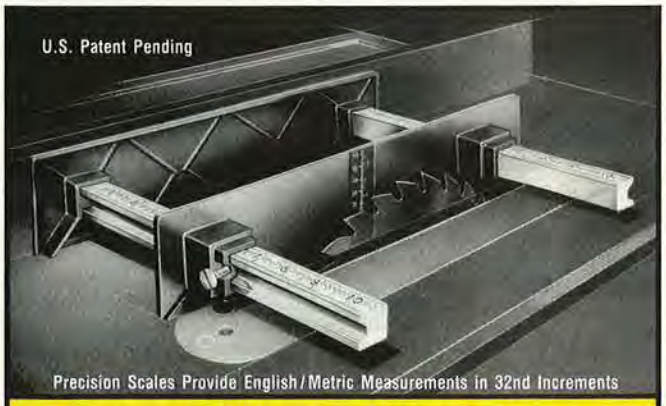

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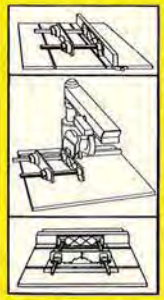

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Dan McGrath was mighty proud of the old log wall. He uncovered it in the kitchen of the family home that had passed down to him. Looking at it always moved him to hold forth about the virtues of simpler times. "These logs—wow! They're more than 100 years old," Dan would say. "People built things to last back then."

No need for plans

Anna Cory, Dan's great-grandmother, was not thinking about making something to last, though, when she stood on the site back in May 1884. There was no house, no barns, no fields—only 80 acres of northern Michigan pinewoods. And, an uncertain future.

Dan's forebear leaned against the wagon where Nan, her teenage daughter, sat. They stared past their mule to the freshly tossed spot of soil. "Oh, Samuel, if only God hadn't called you," Anna said soundlessly to her mate. Now, the women had only two axes, a saw, a draft animal, and gumption to provide for themselves.

It took Anna and Nan all of a day to fell just 10 small pines and cut them to length. By pivoting the fallen trunks at midpoint and lifting one end at a time, the women wrestled two logs into place on the ground. Anna knew that these groundsills, their home's foundation, should be of different wood. Pine would last only two years in contact with the ground. However, durability could wait; winter was coming.

Mother and daughter moved the next pair of timbers so that the logs spanned the ends of the first pair. Then, they stopped.

Anna and her daughter understood about notching the ends of the logs to hold them in place, but they didn't know how. They tried to picture the dovetail notches that they had often seen the men make. Finally, Anna said, "I don't have time to figure the cuts. I'm just going to chop some hollows for the end logs to lie in." Nan watched with a worried eye.

"Daddy told me that you always fit wood together so that it sheds the rain," Nan said. "Those cradle-cuts are gonna catch rain and the wood will rot." Calmly, Anna replied, "We're gonna rot if we don't get a roof over our heads."

Visitors in the night

Each night Anna and Nan climbed over the growing walls to sleep inside the doorless box of brown-barked pine logs. If not convenient, it at least offered protection. When they finally chopped out a door, the pen of logs they had lifted in place with the help of the mule began to seem like a real house.

By July, the corn was nearly knee-high. And that's when the noise began. At first there was a faint clicking in one log. But every night, the nibbling multiplied until it surrounded the exhausted women. Holes appeared in the bark, emitting showers of sawdust that fell directly onto their faces no matter where they slept.

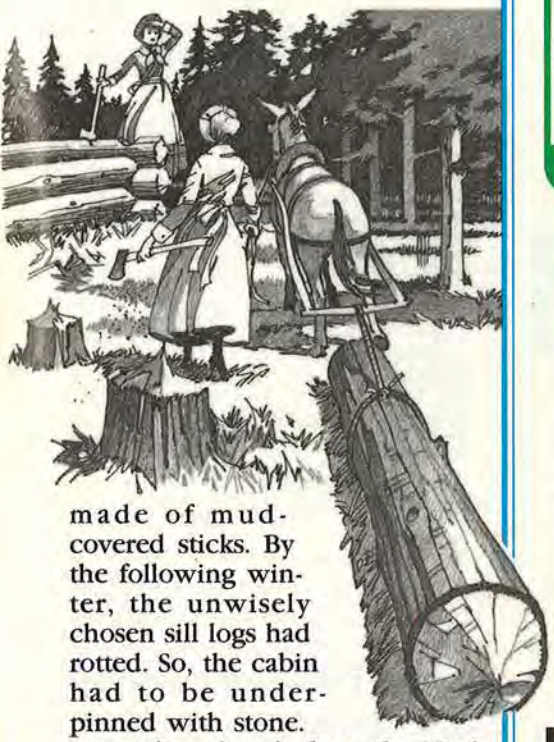
One night, in desperation, Anna grabbed a worn-out mule shoe. Bonk. Bonk. Bonk. In a fury, they tore the insect-loosened bark from the walls.

The now-bare logs cracked as they dried, leaving scars. But, no longer green and palate-tempting, they remained safe from further insect attack.

Prosperity hides the hovel

Gradual prosperity brought changes to the tiny hovel. Before winter, Anna and Nan added a fireplace and a chimney

TALK



made of mud-covered sticks. By the following winter, the unwisely chosen sill logs had rotted. So, the cabin had to be underpinned with stone.

Another decade brought Nan's marriage, and siding of sawed boards. Eventually, the inside walls were plastered over and the original log cabin became the kitchen of a roomy, wood-frame house. And changes continued.

Until the major remodeling in 1988, no one in the present generation realized that the old family home contained log walls. Dan discovered them during an infuriating attempt at rewiring. That's when he decided to feature the logs in the kitchen. The wall was, after all, a sort of tribute to his ancestors and the past, "when things weren't done in a hurry."

By Roy Underhill
Master housewright at Colonial Williamsburg and host of the PBS series The Woodwright's Shop.

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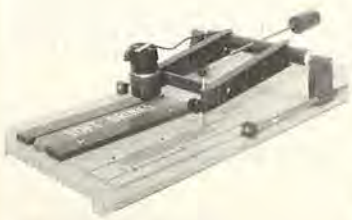

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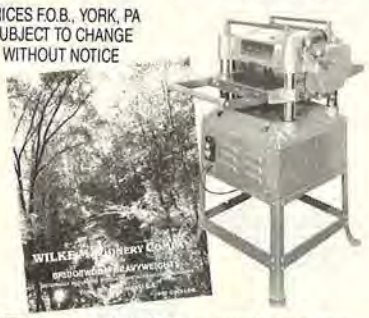

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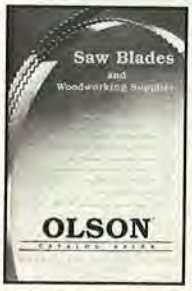

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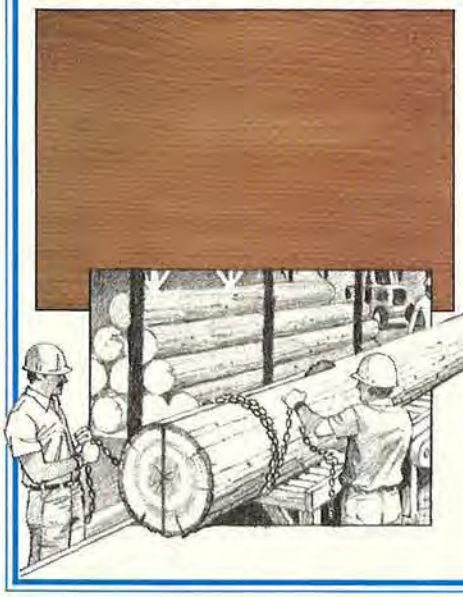

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14-040	14" drill press	313	309
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28-160	10" hobby band saw	189	144
31-050	1" belt sander 2.0 amp.	93	78
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36-040	NEW 8-1/4 cmpd mitre	216	159
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36-755	NEW10"Tilt Arbor Saw	1203	889

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0219-1	9.6V cdlss. drill w/case	295	165
0224-1	3/8" drill 4.5A magnum	189	114
0234-1	1/2"drill 4.5Amag0-850rpm	209	114
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0379-1	1/2" close quarter drill	243	154
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6507	TSC SawZall w/case	239	135
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6014	Orb.sander 1/2 sheet	209	122
6977	Var. temp heat gun	114	75
5397-1	3/8" v/sp ham. drill kit	232	137
5371-1	1/2" v/sp ham. drill kit	335	185
3107-1	1/2" v/sp rt angle drill kit	340	195
6754-1	Drywall gun 0-4000 4.5A	179	119
0230-1	3/8" drill 0-1700 rpm	189	119
3300-1	1/2"v/sp mag rt angle kt	309	179
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6215	16" chain saw	280	169
6365	7-1/4" circular saw	204	119
6366	7-1/4"circ.saw w/fnc&bld	214	125
6368	7-1/4"circ.saw w/fence blade & case	239	135
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LU84M011	Comb. 10"	50	65	40
LU85M010	Super Cut-off 10"	80	96	55
LM72M010	Ripping 10"	24	57	37
LU73M010	Cut off 10"	60	70	44
LU87M010	Thin kerf 10"	24	60	38
LU88M010	Thin kerf 10"	60	74	44
LU96M010	Ultimate 10"	80	107	69
SD306	6" Dado - Carbide		184	105
SD308	8" Dado - Carbide		196	109
F0	1-3/4"X5/8"Bisc.1000 Qty.		32	27
F10	2-1/8"X3/4"Bisc.1000 Qty.		32	27
F20	2-3/8"X1"Bisc.1000 Qty		34	29
FA	Assor. Biscuits 1000 Qty.		34	29
WC106	6 pc.chisel set w/cs1/4"-1"		73	52
WC110	10 pc.chisel set w/case		119	79
FB100	16 pc. forstner bit set		284	155
FB107	7 pc. forstner bit set 1/4"-1"		82	49
94-100	5 pc router bit door system		288	155
JS100	Biscuit Jointer w/case		300	159
CE82	Planer w/case carb blds		218	135
FT2000	3-1/4 H.P. plunge router		299	185

THE NEW "TK" BLADE SERIES

Item	Description	Teeth	List	Sale
TK203	7 1/4" Framing	24	29	17.35
TK206	10" Framing	24	33	19.80
TK303	7 1/4" Finishing	40	36	21.60
TK306	10" Finishing	40	40	23.95
TK903	7 1/4" Combo	30	31	18.60
TK906	10" Combo	50	45	26.95

MAKITA CORDLESS

Model		List	Sale
6070DW	3/8" v/sp rev. drill, 7.2v	130	78
6071DW	3/8" v/sp rev. drill w/removable batt, 7.2v	199	115
5090DW	3-3/8" saw kit, 9.6v	256	139
6010DWK	3/8" cdls drill kit, 7.2v	164	95
6010SDW	3/8" cdls drill, 7.2v	99	65
DA3000DW	3/8" angle drill, 7.2v	251	139
8400DW	Hammer drill kit, 9.6v	272	149
4390DW	9.6v cdls. recip saw kit	230	128
4300DW	Jig saw kit comp., 9.6v	232	129
6012HDW	2 spd. driver drill w/clutch & cse 9.6v	236	122
6092DW	V/sp drill, kit comp	250	127
6093DW	V/sp drill w/clutch-comp.	261	129
6891DW	Drywall gun 0-1400 9.6v	237	135
632007-4	9.6 volt battery	46	30
632002-4	7.2 volt battery	40	28
5007NBA	7-1/4" saw w/elec. brake	233	129
5008NBA	8-1/4" saw w/elec. brake	284	158
BO4510	1/4 sheet pad sander	85	54
9900B	3"x21" belt sander w/bag	268	148
9924DB	3"x24" belt sander w/bag	282	149
9045N	1/2 sht fin. sand. w/bag	231	129
4200N	4-3/8" circ. saw 7.5A	225	127
4301BV	Orb. v/sp jig saw 3.5A	289	155
JR3000V	Vs. recip saw w/cse	227	129
LS1020	New 10" miter saw	463	245
9820-2	Blade sharpener	373	195
1900BW	3-3/4" planer w/cse	209	115
1911B	4-3/8" planer 7.5A	240	139
1100	3-1/4" planer w/case	401	219
9207SPC	7" sander-polisher	276	155
3601B	1-3/8 H.P. router	255	139
3700B	1/2 H.P. trimmer	190	109
9501BZ	4" grinder, 3.5 amp	126	75
BO4530	6" round sander	101	64
BO4550	1/4 sht pad sand w/bag	86	58
DA3000R	3/8" angle drill	270	148
HP2010N	3/4" v/sp hmr. drill w/cs	300	165
2708W	8-1/4" table saw	504	259
2711	10" table saw w/brake	841	489
2030N	12" planer/jointer	3120	1699
2040	15-5/8" planer	2595	1399
1805B	6-1/8" planer kit /case	679	359
5005BA	5-1/2" circular saw	223	135
6404	3/8" drill 0-2100 rpm 2A.	104	65
6510LVR	3/8"drill rev. 0-1050 rpm	145	79
6013BR	1/2" drill rev. 6Amp	241	139
5402A	16" circular saw-12Amp	636	349
3612BR	3 H.P. plunge router	377	189
9401	4"x24"belt sander w/bg	318	175
3620	1-1/4 H.P.plunge router	192	109
4302C	V spd. orb. jig saw	302	159
5077B	7-1/4" Hypoid saw	252	145
LS1440	14" Miter saw	721	439
2414	14"cut-off saw AC/DC	351	199
5007NB	7-1/4" circ saw 13A	209	114
3612B	3 HP plunge rout sq/bs	377	189

SENCO AIR NAILERS

Model		List	Sale
SFN1	Finishing nailer 1"-2"	377	269
SFN2	Fin. nailer 1.5"-2.5"	571	395
SN325	Nailer 1-7/8"-3-1/4"	665	445
SN4	Gen'l purpose 2"-3-1/2"	685	469
LS2	Pinner 5/8"-1"	351	249
SKS	Stapler 5/8"-1-1/2"	351	249
LS5	Pinner 1"-1-1/2"	399	285

BOSTITCH AIR NAILERS

Model		List	Sale
N80C-1	Utility coil nailer	795	399
N80S-1	Stick nailer	795	399
T36-50	Sheath & decking stapler	595	334
N12B-1	Coil roofing nailer	795	399
N60FN-2	Finishing nailer	625	335
T31	Brad nailer	245	149
CWC100	1 HP Pancake Comp.	445	295

SKIL SIZZLERS

Model		List	Sale
6850-02	NEW1/2" EMH hammer drill w/case 4 amp	255	129
3810	10" Miter saw	263	225
3810S	3810 w/60 tooth carb bld.		239
77	7-1/4" worm drive saw	230	145
2735-04	12v v/spd cordless drill complete w/cse. & 2 batt.	210	139

PANASONIC CORDLESS

EY6205B	NEW v/spd. 12 volt drill w/15 minute charger	390	219
EY6200B	NEW 2 spd. 12 volt drill d-hdle w/15 minute charger	350	195
EY6281B	NEW v/spd. 9.6 volt drill w/15 minute charger	350	189
EY571B	V/spd. 9.6 volt drill	239	135

LEIGH DOVETAIL JIGS

D1258R-12-List 329.00-Sale 255.00
D1258R-24-List 399.00-Sale 295.00
LEIGH INSTRUCTIONAL VIDEO-SALE 29.00!!

MMT	12" multiple mort. & tenon attachment for D1258-12	269	219
MMT	24" multiple mort. & tenon attachment for D1258-24	299	239

HITACHI TOOLS

Model		List	Sale
TR8	Plunge router, 1-1/2 H.P.	219	119
M12V	NEW 3H.P. v/sp router	437	239
TR12	Plunge router, 3 H.P.	354	178
C10FA	10" dlxe. mitre saw	490	275
C12FA	NEW12" mitre saw	586	339
C8FB	8-1/2" slide cmpd saw	859	469
FREUD LU91M008	8.5"c/bld 48 tooth	58	49
C15FB	15" miter saw	745	385
FREUD LU85M015	15"c/bld 108 tooth	181	115

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34-444 Table Saw Complete w/1-1/2 H.P. motor & stand 619.00

34-445–34-444 Table Saw complete w/30"Unifence 799.00

37-154 DJ15 6" Jointer w/ 3/4 H.P. motor 1029.00

28-28314" Band Saw w/enclosed stand 3/4 H.P. motor 689.00

70-200 NEW 20" Drill Press 709.00

17-900 16-1/2" Floor Drill Press 385.00

40-601 18" Scroll Saw w/stand and blades 689.00

DELTA #34-080 10" MITER BOX XTRA SPECIAL 199.00 List 289.00

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PIRANHA By Black & Decker CARBIDE TOOTH SAW BLADE

Model #	Dia.	#Teeth	List	Sale
73-716	6-1/2	18	13.70	7.35
73-717	7-1/4	18	13.90	7.99
73-737	7-1/4	24	17.20	9.29
73-757	7-1/4	40	31.30	16.79
73-759	8-1/4	40	44.65	24.99
73-719	8-1/4	22	19.65	11.95
73-715	5-1/2	16	13.70	7.99
73-740	10	32	33.20	15.95
73-770	10	60	61.46	29.95
73-711	10	50	65.08	29.95

HOLIDAY KIT SPECIALS

6012HDWH	Makita cdls 2/sp drill kit w/ clutch Includes extra battery &holster	288	155
6092DWH	Makita cdls v/sp drill kit w/brake. Includes extra battery & holster	305	158
6093DWH	Makita cdls v/sp drill kit w/clutch & brake. Incids extra batt & holster	313	165
9850K	Porter Cable cdls var/spd drill kit Includes extra battery	288	165
7334K	Porter Cable 5" random orbit sander w/case &1 roll 100X &150X discs	253	149
7335K	Porter Cable 5" v/sp rand orb sander w/case &1 roll 100X&150X discs	273	159
7336K	Porter Cable 6" v/sp rand orb sander w/case & 1 roll 100X&150X discs	278	165
555K	Porter Cable plate biscuit jointer w/case &1000 assort. biscuits	339	189
JS100K	Freud plate biscuit jointer w/case & 1000 assort. biscuits	351	184
1581VSK	Bosch top hdle jig saw with case & 30 Bosch blades	305	185
1582VSK	Bosch CLIC barrell grip jig saw w/case & 30 Bosch blades	305	185
34-080	Delta 10" Mitre saw w/Freud LU85M010 80 tooth carb. blade	409	249
Freud Trio of 10" Carb. blades: LM72M010, LU84M011 & LU85M010		232	125

PONY SPRING CLAMPS

Model	Size	List	Sale	Lots of 25
3201HT	1"	2.25	1.35	31.99
3202HT	2"	3.39	1.85	43.95
3203HT	3"	6.45	4.04	89.00

JORGENSEN STEEL I-BAR CLAMPS

Model	Size	List	Sale
7224	24"	27.11	17.55
7236	36"	29.10	18.65
7248	48"	31.96	19.75
7260	60"	35.60	23.55
7272	72"	37.30	25.29

ADJUSTABLE HANDSCREWS BY JORGENSEN

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#3/0	6"	3"	15.57	8.89	49.98
#2/0	7"	3-1/2"	16.74	9.95	53.55
#0	8"	4-1/2"	18.63	11.95	62.95
#1	10"	6"	21.30	12.99	71.49
#2	12"	8-1/2"	24.45	15.95	81.89
#3	14"	10"	31.01	18.95	104.95
#4	16"	12"	40.30	24.89	146.85

STYLE 37 2-1/2" Throat 1/4"x3/4" JORGENSEN

Item#	Jaw Length	List	Sale	Box of 6
3706	6"	9.30	6.29	35.65
3712	12"	10.30	6.79	38.59
3718	18"	11.37	7.35	41.69
3724	24"	12.42	7.99	45.25
3730	30"	13.85	9.05	51.19
3736	36"	15.15	9.95	56.65

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" black pipe clamps	13.10	7.89	83.99
52	1/2" black pipe clamps	10.93	6.30	68.25

BOSCH

Model		List	Sale
1581VS	Top hdle. jig saw	239	133
1582VSC	NEW CLIC Barrell jig saw	245	133
Bosch metal case for above jig saws		34	30
Bosch blade assortment for jig saws 30 of Bosch's best selling blades		25.99	
1942	Heat gun 650°-900°	99	75
1272D	3"x24" belt sander w/bag	299	175
1273D	4"x24" belt sander w/bag	315	182
1290D	1/2 sheet sander w/bag	209	129
11-212VSR	Bulldog 3/4"SDS rtry.drill	339	195
1198VSR	1/2" v/sp hammer drill	229	135
1608	5.6A lam trimmer	140	89
1608L	Same/above w/trim gd	145	92
1609	5.6A offset base trimmer	205	122
1609K	Lam installers kit w/1609	295	169
1601	1 HP Router	165	105
1602	1-1/2 HP Router	199	125
1603	1/2 HP D hndl router	223	139
1604	1-3/4 HP 2 hdle router	219	122
1604K	Same/above w/cs&acc.	269	166
1606	1-3/4 HP D hdle. Router	243	149
3258	3-1/4" planer w/blde grd	210	129
3270D	3"x21"belt sand.w/bag	225	135
1273DVS	V/sp 4x24 belt sander	339	189
1611	3 H.P. plunge router	349	205
1611EVS	3 H.P. V/sp router	410	234
1651	7-1/4"circ.saw drop ft	179	109
1654	7-1/4"circ. saw pvt base	179	109
1632VSRK	Recip saw 8.4A orb-v/sp.	225	135
3050 VSRK	....NEW9.6V v/sp cdls.drill w/case & 2 batteries	235	135
3283DVS	NEW5" Random orbit disc sander 2.3 Amp	159	119

ELU BY BLACK & DECKER

Model		List	Sale
3338	2.25 HPv/sp plunge rout.	387	255
3304	1 HP v/sp plunge router.	261	178
3375	3-1/8"univ. planer 7.2A	280	188
3380	Biscuit jointer w/case	485	265
4024	3x21 v/sp belt sander	289	195
3303	1 H.P. plunge router	210	159
4023	3x21" belt sander 5.2A	261	185
4029	4x24" belt/disc sander 9.2A	469	319

BLACK & DECKER

Model		List	Sale
1166	3/8"drill 0-2500rpm 4A	96	59
2600	3/8"drill 0-1200rpm 4.5A	125	85
1707	8.5"crosscut miter saw	813	449
1703	10"miter saw w/73-770 bld	313	179
3047-09	7-1/4"super saw cat w/br.	282	169
3048-09	8-1/4"super saw cat w/br.	297	185

BIESEMEYER FENCES

	50" commer..saw fence	329	285
	52" homeshop saw fence	249	229

JET TOOLS

Model	Description	List	Sale
JBS-14MW	14" band saw 1 HP	482	375
JTS-10	10" tbl saw w/std1.5 HP	554	449
JTS-12	12" tbl saw w/std1.5 HP	630	499
JWS-18	1/2" shaper w/std1 HP	479	365
JJ-4	4" jointer, 1/2 H.P.	310	275
JJ-6	6" jointer, 3/4 H.P.	465	365
JWP12	12.5" bench plnr 2 H.P.	569	379
JWP12D	Dust chute for JWP12	45	22
JSG-6	6 x 48 belt & 12"disc sander, 1-1/2 H.P.	634	465
OR1012	10" bench drill press 1/3HP	179	139
OR1412	14" bench drill press 1/2HP	299	245
OR2501F	20-1/2" flr drill press 1HP	655	509
OR1758	17"bnch drill prs.5 HP	319	289
OR1458F	14"flr drill press 3/4 HP	369	325
OR1758F	17"flr drill press 3/4 HP	395	349

RYOBI SPECIALS

Model		List	Sale
R500	2-1/4 HP plunge router	326	155
TS25IU	10" miter saw	392	177
TS25IUS	10" miter w/acc. kit & B&D 73-770 carb bld	435	219
AP10	10" surface planer 13A.	820	358
RA200	8-1/4" radial arm saw	515	245
RE600	3 H.P. plunge router	398	215
R150K	1 HP plunge router w/cs	206	105
BE321	3x21" v/sp belt sander	259	129

PORTER CABLE

690	1.5 HP router 8A	225	128
691	1.5 HP router D hdle	245	137
536	1.5 HP speedmatic router	310	198
518	3 HP 5 speed router	560	338
520	3 HP 15A router	510	315
695	1.5 HP router/shaper	310	198
696	H.D. shaper table	170	119
351	3"x21"belt sand w/o bag	225	128
352	3"x21"belt sand w/bag	235	133
360	3"x24"belt sand w/bag	310	175
361	3"x24"belt sand w/o bag	290	169
362	4"x24"belt sand w/bag	325	185
363	4"x24"belt sand w/o bag	310	179
315-1	7-1/4" top hdle circ saw	195	115
9315-1	315-1 comp w/cs&carb bld.	225	129
617	7-1/4" pushhandle saw	195	115
9617	617 comp. w/cs & carb bld.	225	129
314	4-1/2" trim saw 4.5A	215	128
9548	X HD bayonet saw w/cs	290	192
9629	Recip saw v/sp 8A	235	139
9627	Recip saw 2 spd 8A	225	128
666	3/8"HD vsp drill 0-1200rpm	185	122
621	3/8"HD vsp 0-1000rpm	155	95
320	Abrasive plane 3Amp	160	109
9118	Porta plane kit 7Amp	335	185
7545	0-2500 drywall gun 5.2A	169	104
505	1/2 sheet pad sander	195	112
7511	3/8" v/sp drill 5.2Amp	185	115
7514	1/2"v/sp drill 0-750rpm	195	119
537	1.5 HP.D hdle router	325	203
7548	Top hdl jig saw 4.8A	230	129
7648	Barrel grip jig saw 4.8A	225	145
330	Speed block sand 1/4 sht	97	55
555	Plate biscuit jointer w/cs	299	165
345	6" saw boss 9Amp	170	99
9345	345 comp. w/cs&carb bld.	220	129
100	7/8 H.P. router	165	105
5009	Mortise &Tenon jig	54.95	49
5116	Omni-Jig	395	265
9647	TIGER CUB recip saw	195	119
9850	12v cordless drill w/case	230	135
8500	Extra 12v battery	48	35
	NEW Tools By Porter Cable!		
9637	Full v/sp recip saw 8 A	240	135
7536	2-1/2 HP 2 Hdle Router	355	209
7537	2-1/2 HP "D" Hdle Router	375	225
7538	3-1/4 HP plunge router	399	249
7399	5.6A drywall cutout unit	120	75
7310	5.6A lam trimmer	145	89
7312	5.6A offset base lam trim.	209	119
7319	5.6 A tilt base lam trimmer	165	105
97310	Lam Trim Kit w/std. Base, Tilt Base, Offset Base, Slitter Base, Guide & Cs	330	185
7334	5" random orbit sander	205	119
7335	5" Var Speed 2500-6000 rpm Random Orbit Sander	225	135
7336	6" Var Speed 2500-6000rpm Random Orbit Sander	330	139
693	1.5 H.P. plunge router	280	165
6931	Plunge router base	120	75
9505	**505 Commemorative Edition brushed steel 1/2 sheet pad sander w/oak case SUPER SPECIAL**		139

FREE FREIGHT TO THE 48 CONTINENTAL STATES ON EVERY ITEM•GIFT CERTIFICATES NOW AVAILABLE

Print this article

9,012 miles from home, and loving it!

Here at *WOOD*®magazine, we're not surprised when readers drop by from north, south, east, and west. After all, we're situated in Des Moines, Iowa, the middle of the Heartland. We couldn't believe it, though, when Raymond and Lorna Amoretti stopped in last November to say hello—all the way from South Africa! Ray's a longtime subscriber, and since they were in the area . . . .

Thanks Ts'ai . . . we think

When Ts'ai, an official of the Chinese Imperial Court, made the first paper from mulberry tree bark in 105 A.D., he never imagined that today every American would annually consume the equivalent of a 100'-tall tree in paper products.

Presidential tree-planters

Over the years, U.S. presidents have planted numerous trees on the White House grounds. Among those still in evidence:

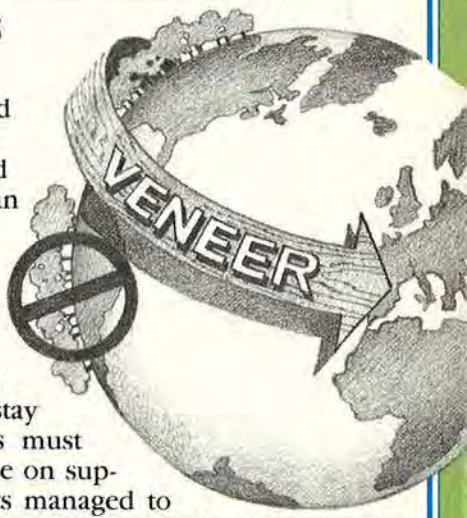
John Quincy Adams, an American elm; Andrew Jackson, several magnolias; Herbert Hoover, a white oak; Franklin Roosevelt, a basswood; Harry S. Truman, American boxwood; Dwight D. Eisenhower, a black walnut; John F. Kennedy, magnolia; Richard M. Nixon, fern-leaf birch; and Ronald Reagan, live oak. But, George Bush may be remembered as the greatest tree-planter. If congress OKs the plan, Bush will implement a program to plant four trees for every American in 1991, then another billion each year for the next 10! To kick off the initiative, he planted a redbud.

No weak willow

No tree family has as wide a range as the willow (*Salix spp.*). You'll find willow trees growing in the polar regions (little more than a shrub) as well as in the tropics.

Strong, yet lightweight and soft, willow wood ranks low in commercial value. However, it certainly has its fans. Alaskan carvers like fancy hiking staffs shaped from wildly figured diamond willow. In England, cricket players have traditionally clutched bats made from what they call—aptly enough—cricket-bat willow. And in the U.S., black willow has historically been the wood relied on for artificial limbs.

North American hardwoods look better than ever



According to the Hardwood Plywood Manufacturers Association (HPMA), European manufacturers of wood products soon may turn to American hardwoods to replace rain-forest species they currently import.

After an international trade show in Birmingham, England, HPMA representatives reported to their members that public environmental feelings run high in Europe, and to stay in business, timber-using companies must emphasize and publicize their reliance on supplies from sustainable sources (forests managed to replenish themselves). To take advantage of this, HPMA members plan campaigns touting our native trees.

Japanese drive up basswood prices

Phil Odden, a carver friend of ours from Barronett, Wisconsin, reports at press time that prime basswood in his area has suddenly more than doubled in price, from $500 per thousand board feet (mbf) to over $1,000. It seems that Japanese companies seek light, straight-grained wood that resembles now-rare wood from their native land, or that can be finished to resemble other woods. Basswood, as well as cottonwood, fills their needs. But, for North American carvers, that spells scarcity for top-grade stock, as well as higher prices.

Illustrations: Jim Stevenson

FIRST IN FINISHING FOR 25 YEARS

Announcing Porter-Cable's limited-edition commemorative sander. Twenty five years ago, Porter-Cable made woodworking history with the introduction of the Model 505. . . the world's first high-speed, small-orbit, half-sheet finishing sander. For a quarter century, it's been unmatched for performance and durability.

And now, this commemorative limited-edition version is available to add to your collection. With its mirror-polished housing and unique hardwood presentation case, this is one tool you may just want to have for looks alone.

But don't buy this American Classic just for its beauty. Because this sander's built to deliver. Made with the same attention to quality and detail that's been a Porter-Cable tradition for over 80 years. Solid construction outside and in, to deliver professional performance for superior quality in all your projects.

So add the finishing touch to your work and your workshop. Porter-Cable's commemorative finishing sander–available now at participating Porter-Cable distributors everywhere. For stocking distributors in your area, call Porter-Cable at 1-800-321-9443, or see "Tools, Electric" in your Yellow Pages.

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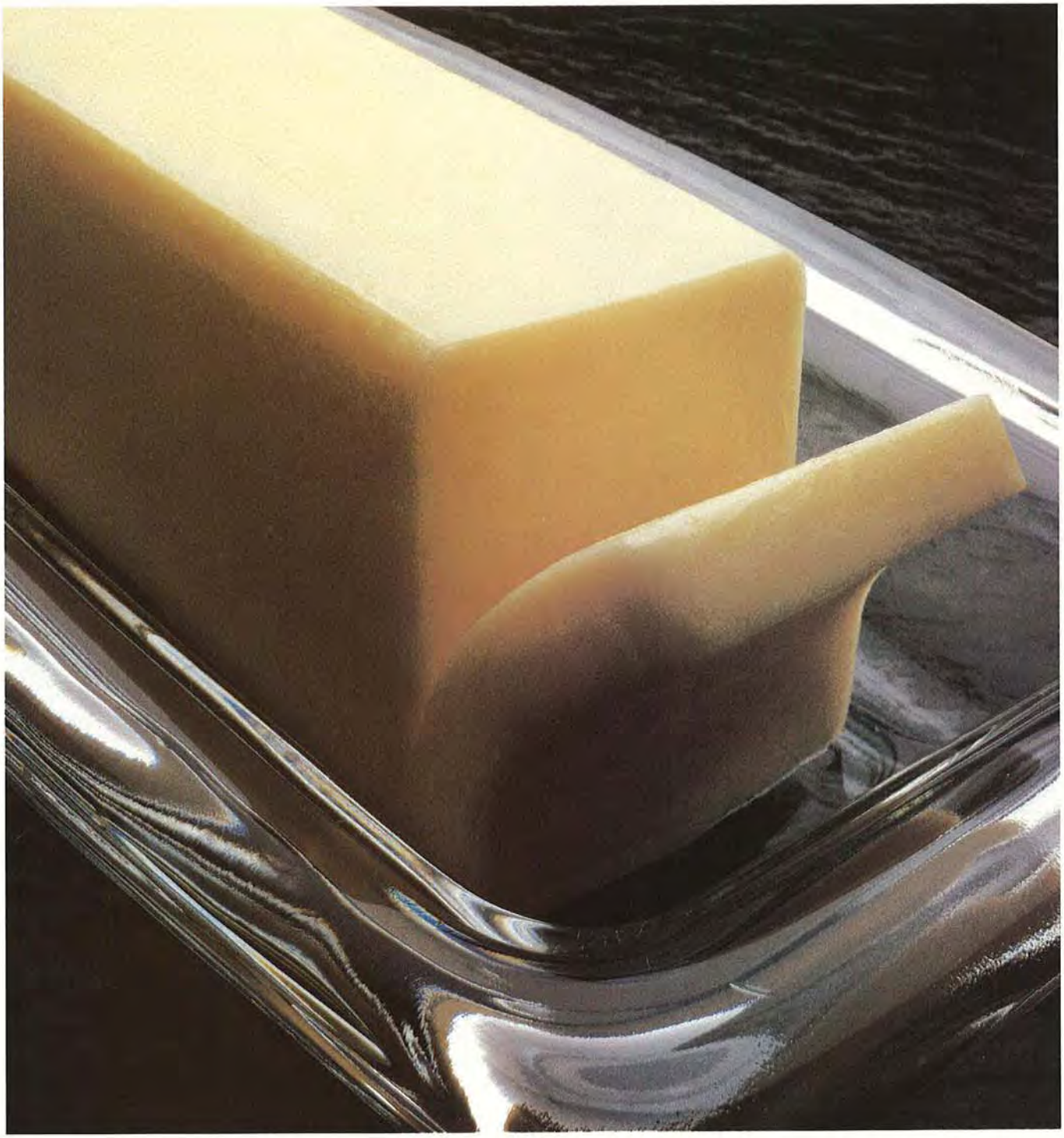
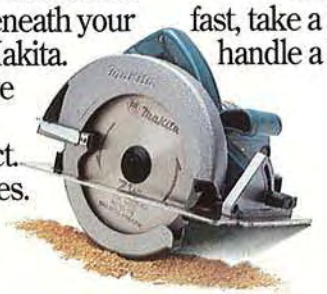


Solid Oak As Seen By A Makita Circular Saw.

Don't grit your teeth. Don't even tense your muscles. You're going to make one of the hardest hardwoods seem to melt beneath your blade. Don't worry. You're using a Makita.

Makita Circular Saws have motors that are extraordinarily powerful but exceptionally compact. They have durable, heavy-duty bases. And precision ball-bearing construction.

So if you want to eat solid oak for breakfast, take a tip from us. Get a saw that can handle a high-fiber diet.



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